CHNOLOGY DEPARTMENT

Gas Journal

Vol. 254. 100th Year. LONDON, MAY 5, 1948. No. 4431. Price 1/-

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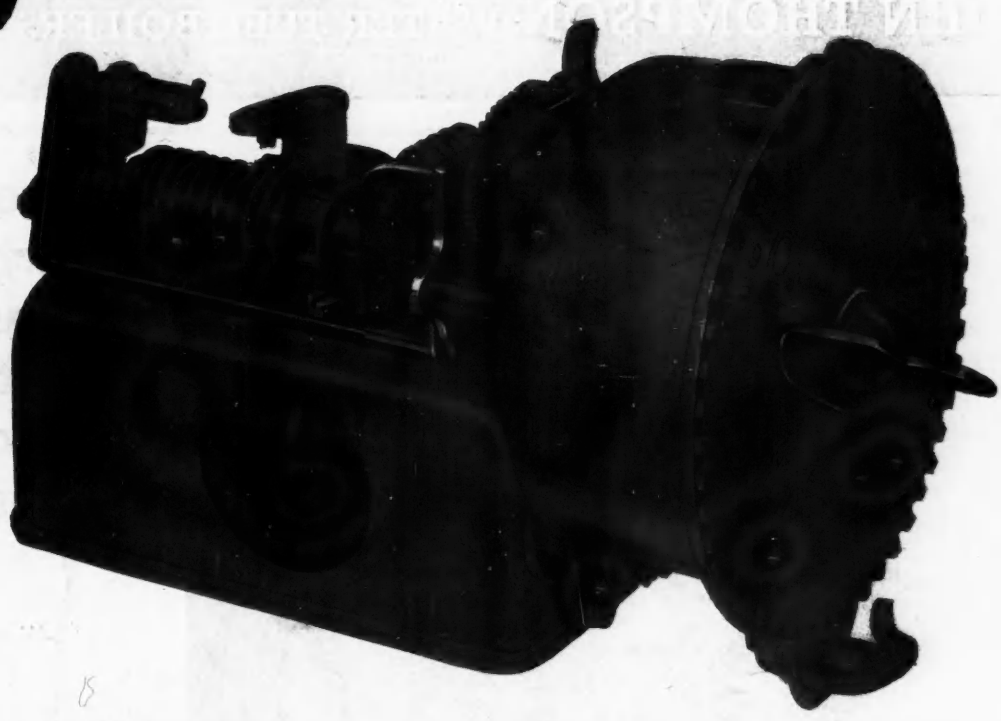

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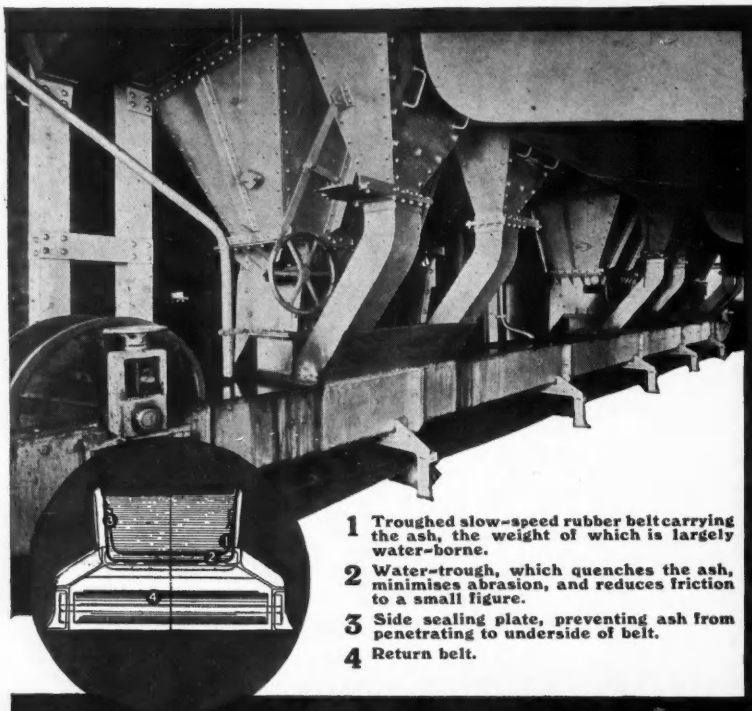

1 Troughed slow-speed rubber belt carrying the ash, the weight of which is largely water-borne.
2 Water-trough, which quenches the ash, minimises abrasion, and reduces friction to a small figure.
3 Side sealing plate, preventing ash from penetrating to underside of belt.
4 Return belt.

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The submerged belt principle of the John Thompson conveyor reduces wear and renewals to incredibly small proportions, so that the single moving part, a rubber belt submerged in water has a long trouble-free life.
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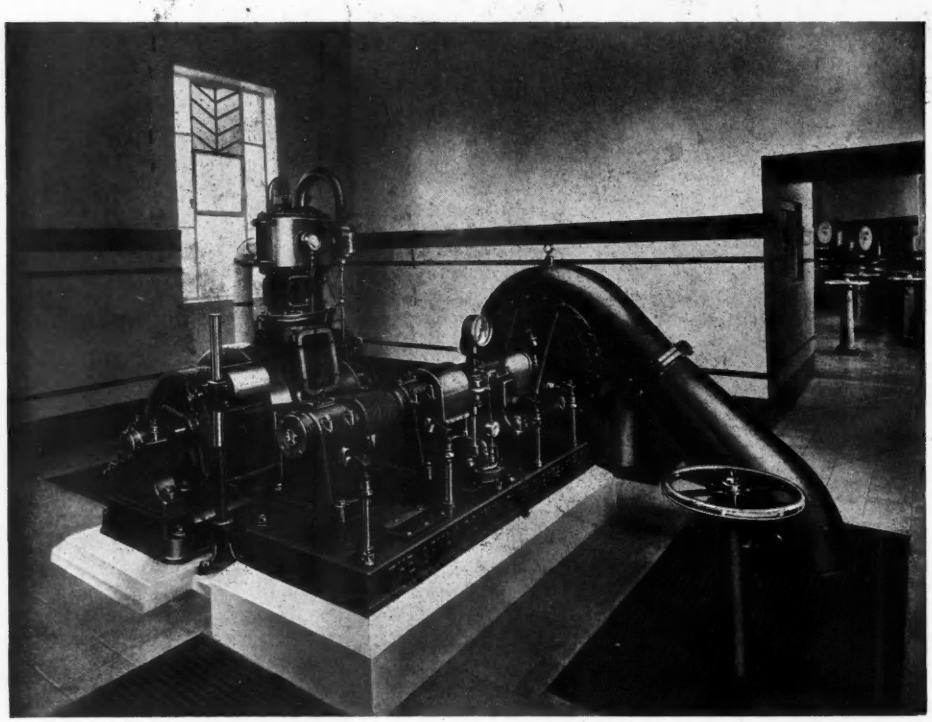

Rateau Turbo Gas Boosters and Exhausters

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Fig. 907.—Rateau Turbo Booster driven by a Vertical High Speed Steam Engine through "V" Ropes.

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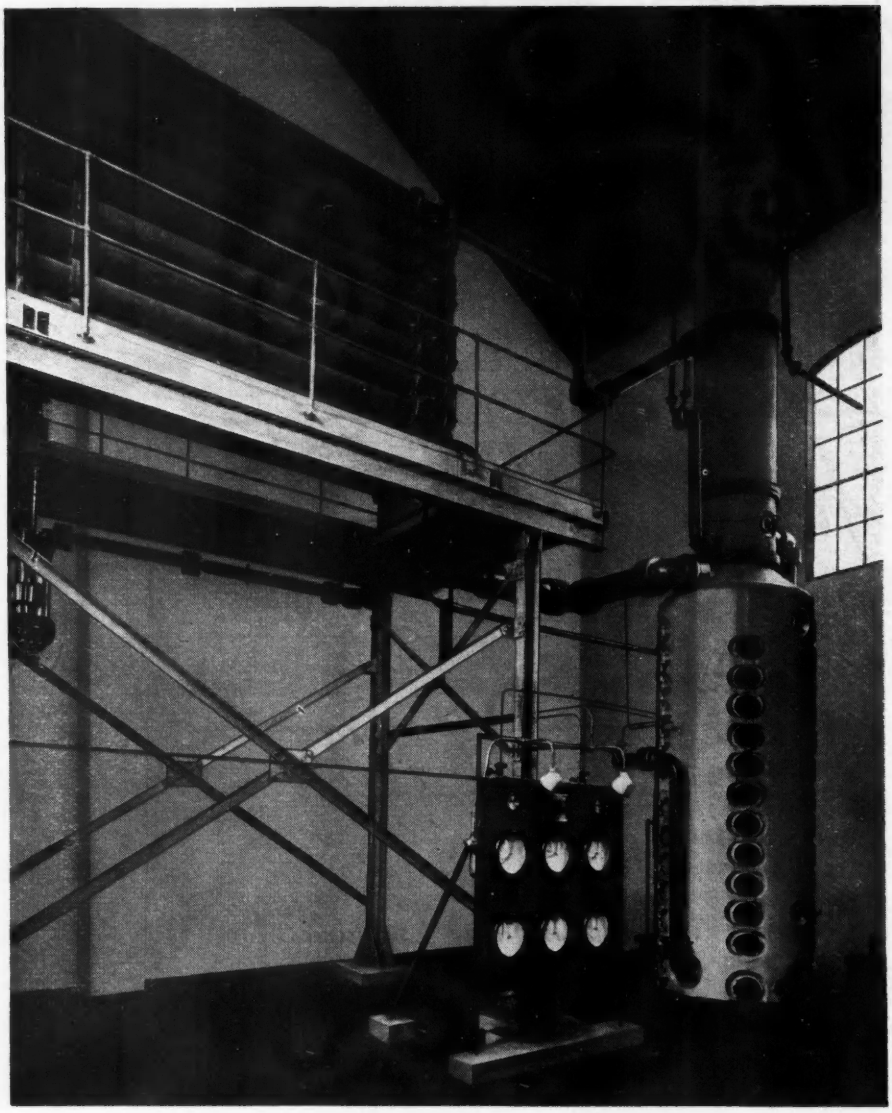

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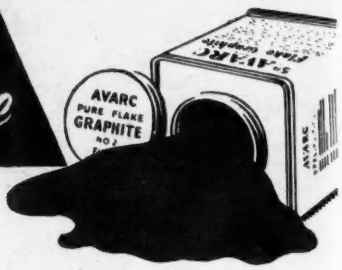

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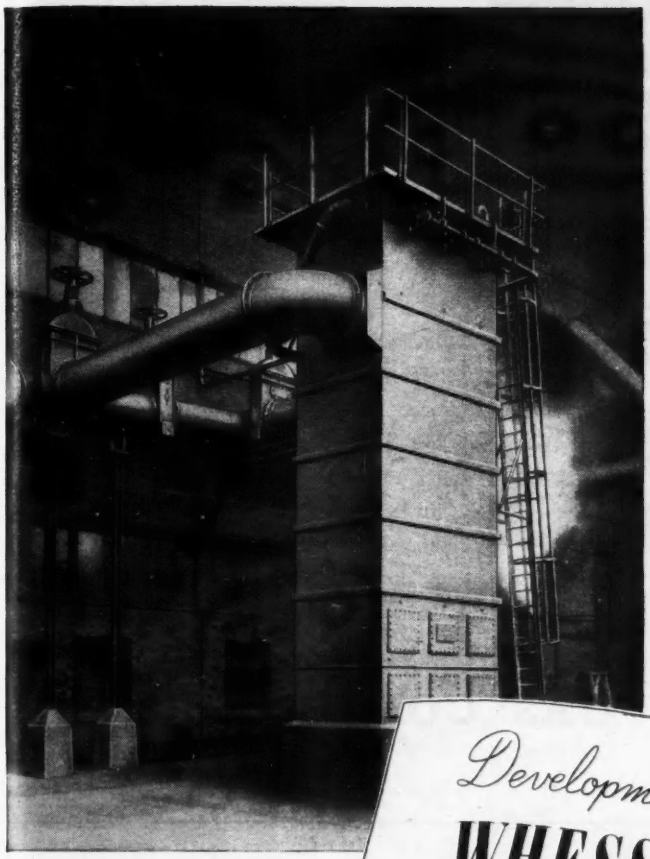

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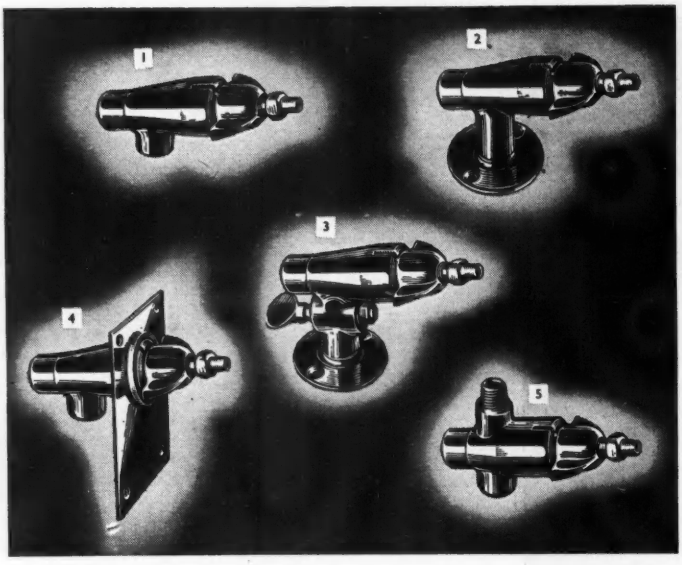

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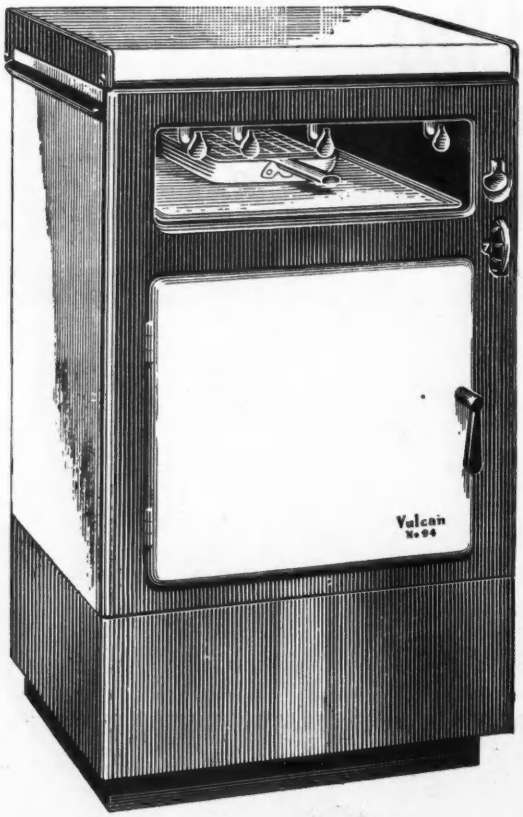

Vulcan 94P

GAS COOKERS

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[B. I. F.—See our exhibit on STAND No. D.405/304.]

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- Pipes being wrapped do not revolve—permits use of slightly bent pipes.
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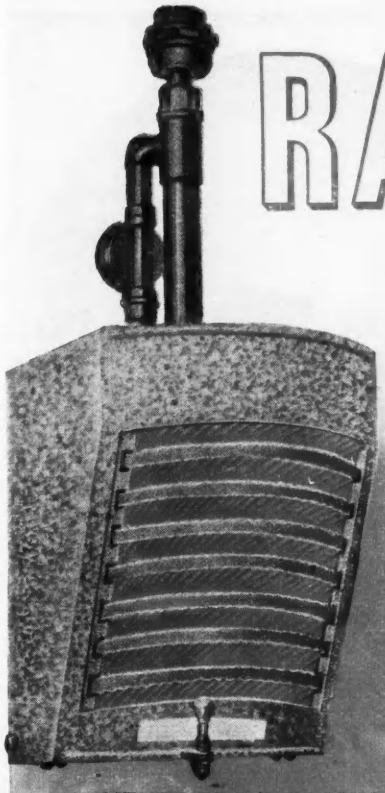
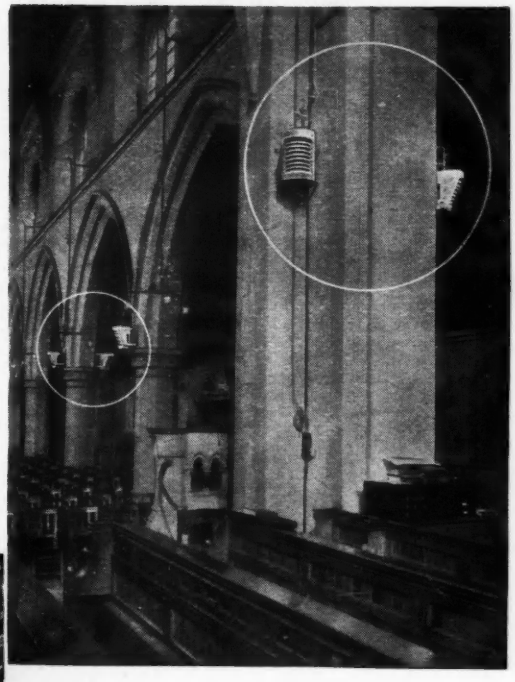


"NEWTHERM" RADIUS HEATER
(*Docking Patent*)



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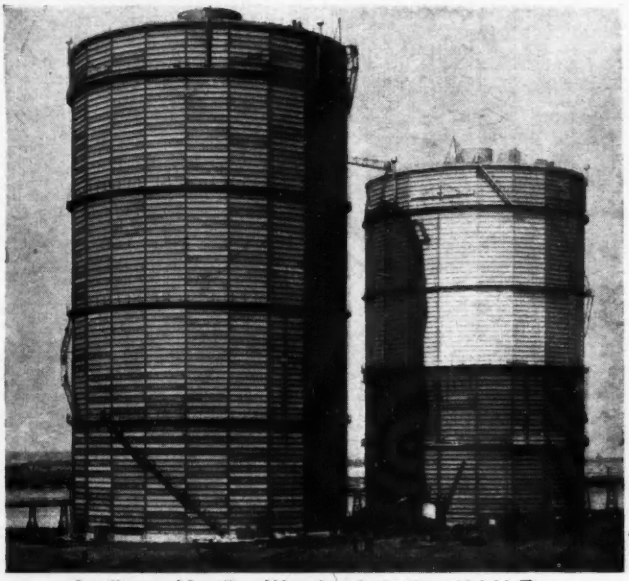

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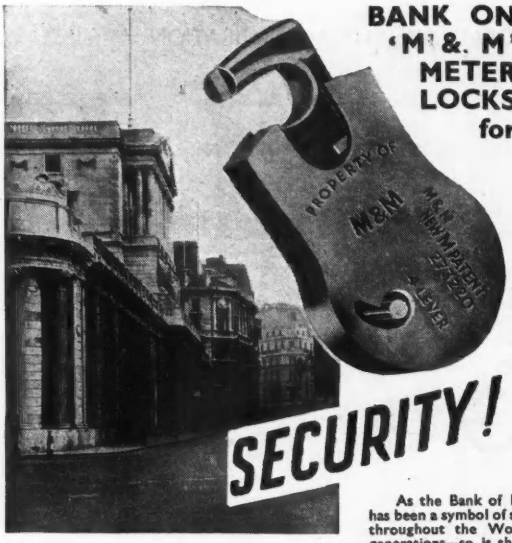

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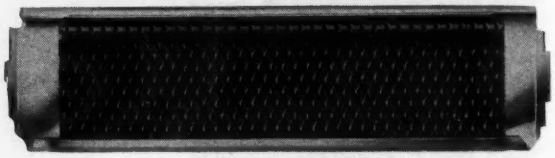

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The cross strand formation eliminates hot spots, warping and cracking. Laboratory tests have given 3700 heat hours on alternate heating and cooling.

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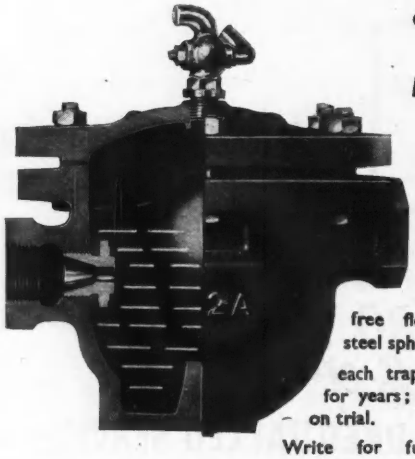

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Unique in design foolproof in operation.

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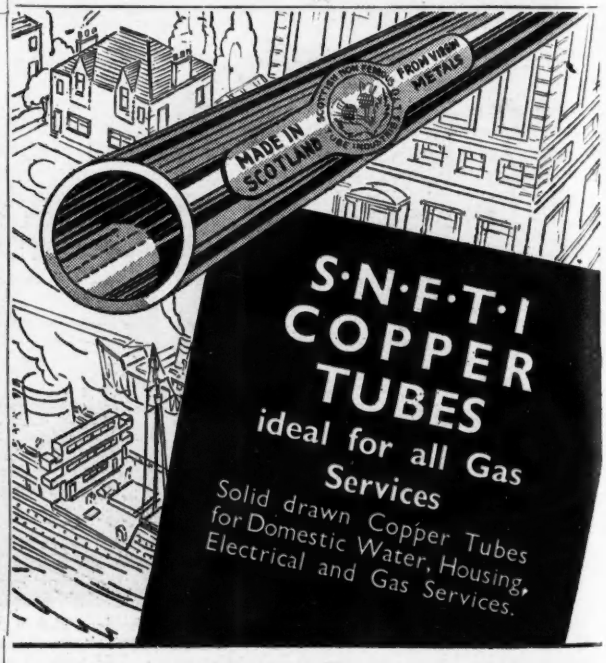
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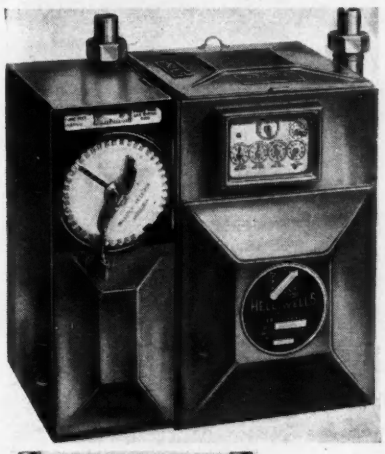
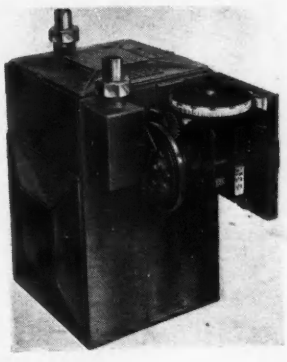
METERS

WITH OR WITHOUT PRE-PAYMENT DEVICE

by Helliwells





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4. This device can also be utilized to provide gas for a by-pass to refrigerators, etc., after the main supply has been shut off.

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FOR LABOUR-SAVING AND EFFICIENT SPRAYING

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The special feature of this pump is that the pump bucket works entirely outside the liquid.

18 Gallons,

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Prices on application.

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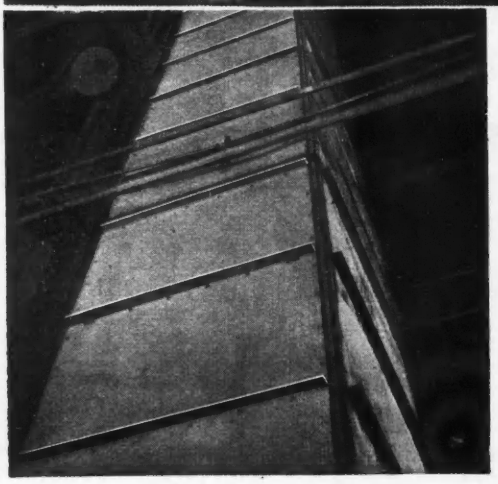

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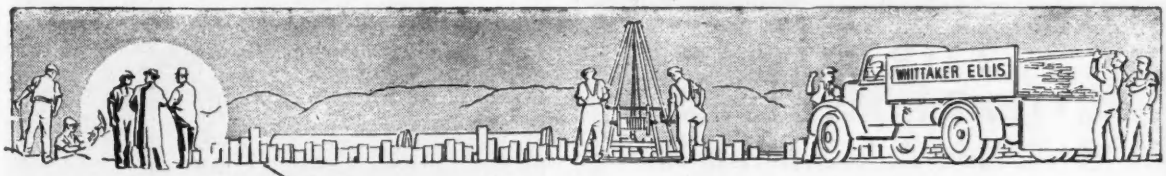

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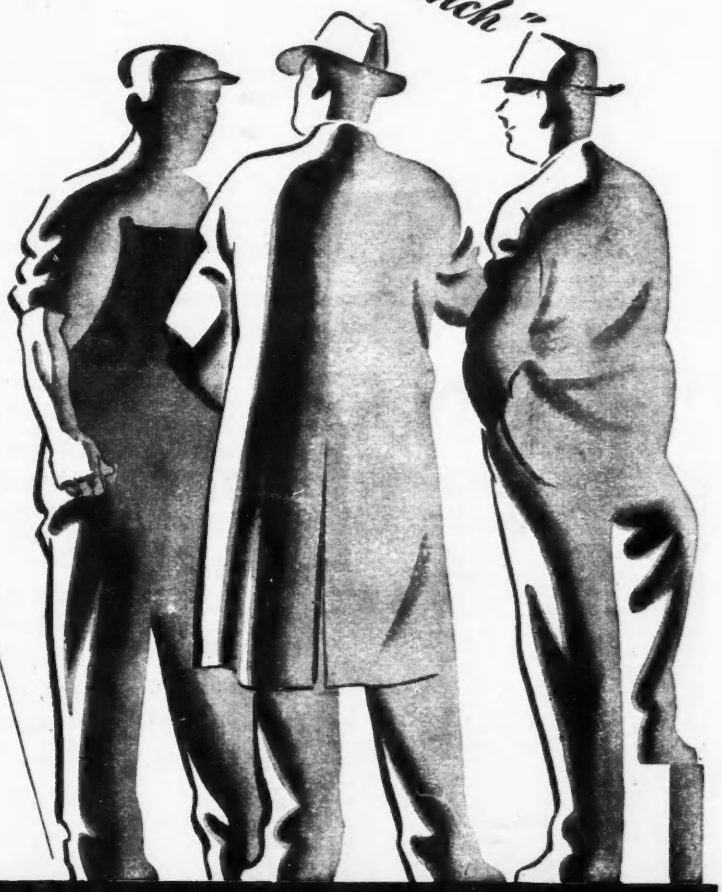

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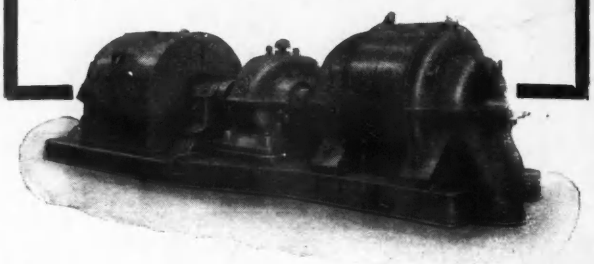

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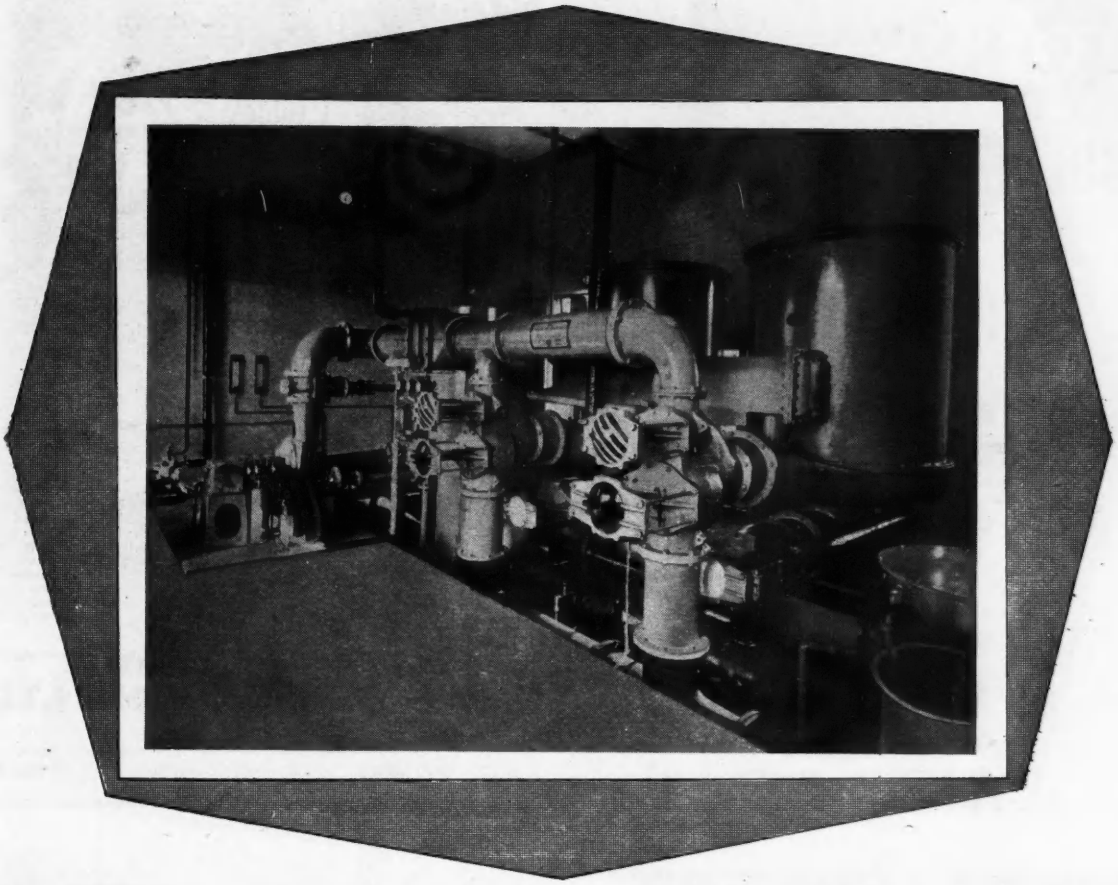

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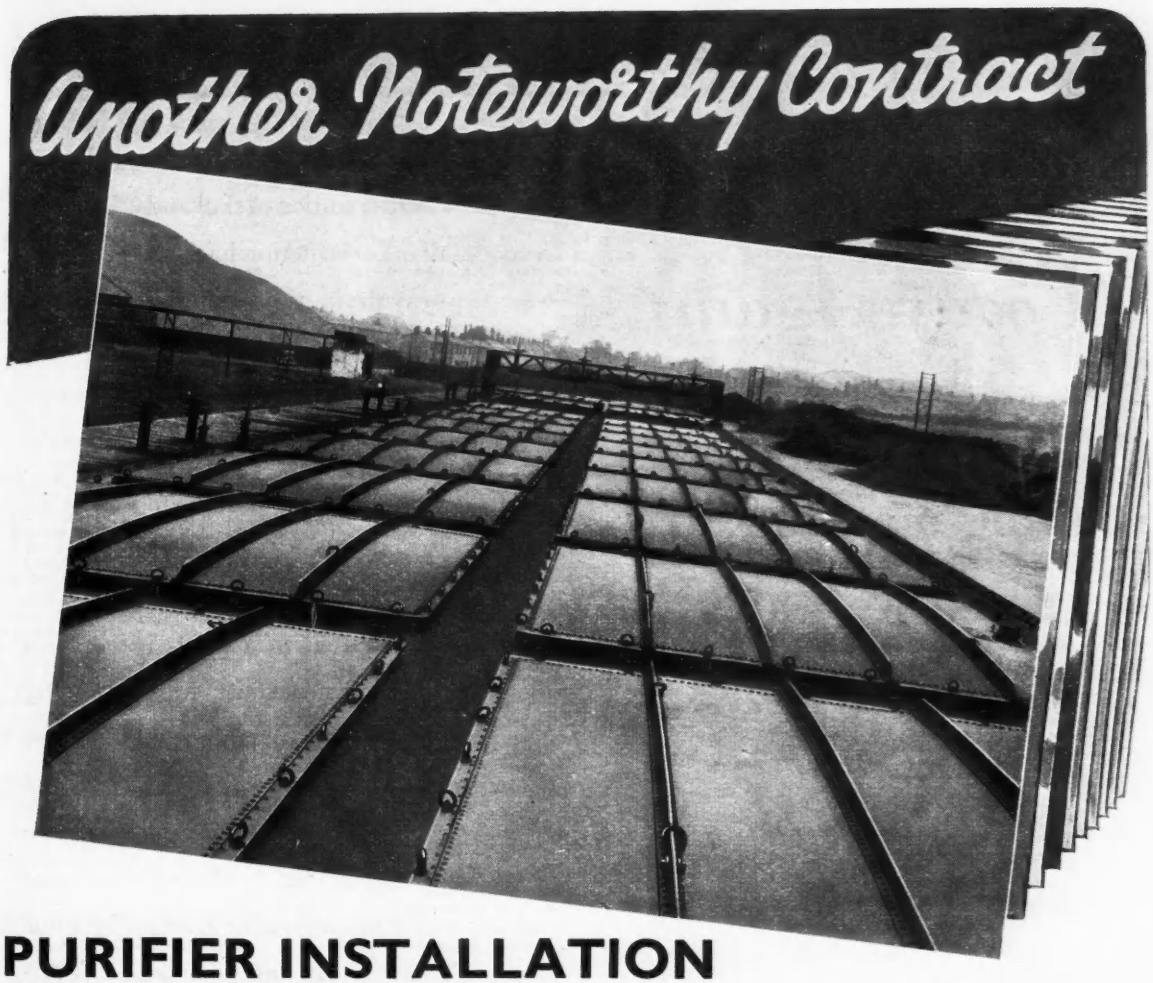

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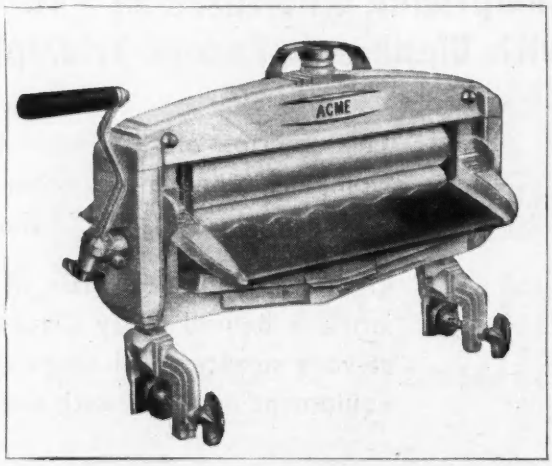

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for GAS WORKS
(Left) One of two steam-driven Booster Compressors, 180,000 cu. ft. per hour to 30 lb. per sq. in.
(Right) A Gas Exhauster driven by a 150 B.H.P. Steam Turbine at 13,000 R.P.M.
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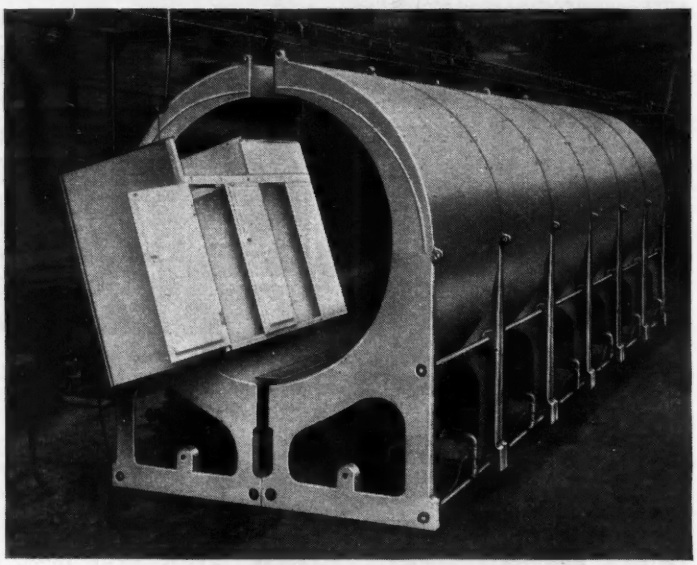

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Vol. 254 May 5, 1948 No. 4431

COKE IN THE MIDLANDS

OUR columns last week carried a report of the annual meeting of the Midland Counties Coke Association, at which the Chairman, Mr. F. C. Briggs, presided. In the course of his review of the year, Mr. Briggs spoke, on a disappointed note, of the important question of merchants' price margins, regarding which, in spite of protracted meetings, there is still a wide divergence of view. A great deal of effort has been expended in an attempt to establish a properly co-ordinated price policy and standard conditions of sale for solid fuels. "To some of us," he remarked, "it has been obvious for years, and we have never ceased to press this home, that sooner or later reconstruction of price schedules was inevitable. What I had hoped was that this reconstruction of coke schedules should come from *us*, and that we should not wait until it was forced upon us by some outside agency. . . . The initiative is not now with us." The Association met at a time when coke supplies were over-plentiful, with mounting stocks at gas-works. Conditions were very different a year ago, when there was acute shortage and considerable anxiety. At that time a coke pooling scheme was put into operation with the object of ensuring that consumers in shortage areas could have coke transferred to them from places where it was more plentiful, the consumers in the shortage areas paying the local price and not being penalized because of long rail hauls. This scheme is now being used to relieve gas undertakings of their surplus coke, the while the Minister of Fuel and Power has increased the domestic coke allocation. This slight increase in allocation will obviously afford relief to all concerned and be in the best interest of the consumer. True, export of coke is getting under way, but the extent is as yet very limited.

Mr. Briggs had also something to say about price cutting. In the early days of the Association it had to be "got over" to Midland gas undertakings that price cutting was a foolish policy. The task was formidable, but through co-operation with the hard coke producers and the merchants the outcome was a successful, agreed, and unified working plan. It was a hard-won achievement—and, commented the Chairman somewhat bitterly, "those of us who were in it from the beginning find it hard to watch the crumbling of the structure. There is no doubt in my mind that we have not retained the goodwill of the merchants and we have not met their reiterated request for better margins." And he went on to discuss the position under nationalization. Presumably the Association as such will cease to exist, but those who take on the responsibility of selling coke for the Area Boards will be unwise not to take advantage of the vast fund of experience and knowledge gained by the Association. "Nationalization," he concluded, "will not be the opening of a glad new world but will be the carrying on of existing gas undertakings by those of us who have been in it all our lives; and instead of having the freedom to carry out our own views, we may have to carry out the instructions of those imported into the industry for the first time. The work will be ours and the difficulties will be ours." How much better if under the new structure the goodwill of the distributors could have been assured.

REFLECTIONS ON THE NEW REGIME

IT is to be expected that Presidential Addresses will be devoted during the next few months to the discussion of the probable effects of the new régime on the organization of the industry and of the associations which serve so usefully as a forum for the thrashing-out of technical and administrative problems. Mr. James MacLusky's address to the Manchester District Association is one of these. He covered a very wide ground. And he brought to the task the somewhat unusual experience of one who, trained in a constructional engineer's works, served first a small company-owned undertaking and then a comparatively large municipal one. He has experienced two types of policy and now looks forward, with intelligent appreciation and courageous confidence, to a third.

Nearly every executive officer is subject to some sort of board or council whose members generally have no expert knowledge of the business they control. If they are wise they leave every executive decision to the officer they have appointed, contenting themselves with criticism of the general results of his operations, but never interfering in the details. It is to be hoped that the new Area Boards will function in this way. And particularly that they will "insist on the maximum amount of decentralization." For the success of the gas industry has been achieved by personal contact between the staff of the undertakings and the consumers. "Policy must always be determined at the highest level, but . . . the actual operation of our services depends on personal contacts in the districts." On the other hand, there are regrettable instances in which elected bodies have prevented the chief executive, for reasons generally of misguided economy, from developing his plant to cope with future expansion which he could foresee, but which they refused to recognize.

A case, somewhat in point, is that of the unfair competition by electricity to which Mr. MacLusky refers. It is indeed already clear that the Minister is not prepared to face up to the difficult situation in which the public, having for long enjoyed prices much below the cost of generation, subsidized by the industrial consumer, finds it very difficult to see the necessity, for such it is, of an all-round increase in the tariffs for domestic electricity. Fortunately, the new Gas Council is to be led by two men of sufficient calibre to sustain the Gas Industry's case and, incidentally, to bring some pressure to bear to neutralize the persistent efforts of electrical interests to falsify the relative positions of the two in relation, say, to the cooking load. But will they succeed in persuading the Minister to restore justice by issuing some such Regulation as

Mr. MacLusky proposes, ordaining that neither commodity shall be sold to anyone at less than the cost of production and distribution?

The case of imported oil is a little different. It may be doubted whether it is ever sound policy to bolster up any method of production by such artificial means as subsidies or taxes. Better far, surely, to let the natural forces of supply and demand settle the question whether it is or is not economical to use oil in the production of gas in this country. On the other hand, the "prodigal waste of caking bituminous coals" for mere combustion is bad practice which is having, and is likely to have, a serious deleterious effect on the economy of the whole country, so much is that bound up in the technically correct use of coal, our basic national asset. Perhaps the very first item in the anticipated National Fuel Policy must be the assessment of our resources in the several types of coal and their rigid allocation to the uses to which they are appropriate.

There are many other points in this comprehensive address —"quite a number of things" which have already been brought forward by others, and many which will need to be brought up more than once again when the over-riding policy comes to be enunciated. Education, training, remuneration, promotion, administration, and such matters as consumer service and labour difficulties. Mr. MacLusky thinks, and we hope he will be proved right, that the financial structure of the industry under the new régime "will be very sound," with continuity of policy and the provision of ample renewal and reserve funds so that plant can be maintained in a high state of efficiency. We are not so happy about his argument for incentives in the form of bonuses for doing certain unpleasant jobs and we do not think his comparison with policy in the U.S.S.R. is altogether wise. He has read that the technician there gets very much higher rewards for his skill and ability than in this country, but that punishment for failure is, "of course," also greater. We have read that punishment for criticism is greater still.

COME TO THE FAIR

UNTIL May last year the theatre of world trade closely resembled those unfortunate halls scattered about the country which, suffering from bomb damage, blast, and the other ills of wartime, remained dusty and neglected. On to that battered stage leapt the first post-war British Industries Fair, carrying with it the spirit of resurrection and hope. Despite its brave show there was a forced note in its gaiety and there were some who shook their heads and stayed away. It was felt that in view of the crippling shortage of raw materials and doubtful availability of goods, the spreading of so opulent a net was a premature gesture. Nevertheless, the pessimisms of the minority were not justified, and the B.I.F. played a rôle that was not only necessary but vital.

This year the scene is brighter, and there are few, if any, shaking heads. The flying pennants and gay colours have an added significance, showing that British resourcefulness has reconditioned the country's machinery of manufacture. Delivery dates, too, have shrunk from months and years to mere weeks, and the marked improvement in manufacturers' ability to fulfil orders has brought a change of heart and a new determination. The latter characteristic is likely to be tested to the hilt, for this is a critical time for exports when the sellers' market is declining in many industries and new markets must be quickly established. It is heartening to note that technical skill and inventive genius have recognized this necessity for new media of trade, and have established bridgeheads in a number of hitherto unchallenged fields. A study of the B.I.F. in 1948 reveals certain predominating facts. One is the obvious and successful attempt on the part of the organizers to improve facilities for overseas buyers; another is the capacity of the gas industry to keep pace with and frequently dominate progress in the industrial fields. This is proved conclusively by a visit to Castle Bromwich where gas-operated equipment occupies an enviable position in the competitive market. In particular the British Gas Council is to be commended for its choice of exhibits, although we suggest that the display aspect might well have been strengthened. The fact that at first glance this is "just another stand" means that the display is hardly worthy either of the industry which it represents or the very high quality of the equipment exhibited. The Birmingham section of the Fair is described at some length elsewhere in this issue.

Briefly then, the B.I.F. is firmly back on its feet again; whatever the future may hold, it is certain that British engineering and manufacturing skill will not be found wanting—and in this the gas industry may well lead the way.

Letter to the Editor

Gas Services and Installations

DEAR SIR,—In the "JOURNAL" of April 14, you published an article explaining the new British Standard, A.B. and C. steel tubing. In this it was stated that "With the thin walls of Class A tubing insufficient metal may be left under the roots of the threads when these are cut under practical fitting conditions. For mechanical reasons Class A tubing is, therefore, considered unsuitable and potentially dangerous if used for the conveyance of gas."

We agree with this, but in view of the importance of saving steel from the national standpoint, there is no doubt Class A tubing if unscrewed, leaving the wall of the tube unweakened, would be entirely suitable for use with gas. We have recently in conjunction with the Stamford Engineering Co., Ltd., commenced manufacture on a joint patent adaptor, which will join plain end tubes to any standard malleable or steel fitting. A blue-print explaining the uses of this adaptor has been issued. The adaptor has been exhaustively tested and passed for use with A tubes by the Ministry of Works, and many of these triple-seal adaptors are in use all over the country, for gas, water, and low pressure steam. We are selling under the name of Tube Ferrules, Ltd., 5, Staples Corner, N.W.2.

Yours faithfully,

N. PEARSON, Director,
British Fittings Co. (Hendon), Ltd.

1, Adrian Avenue,
North Circular Road, N.W.2.
April 27, 1948.

Personal

The Combustion Appliance Makers' Association (Solid Fuel) announce with regret the resignation of Mr. P. A. H. ELLIOT as Director, as from April 30. Pending the appointment of a new Director, the activities of the Association will be carried out by the Assistant Director, Mr. C. E. Knight.

* * *

In addition to his position of Deputy Accountant of the Tottenham and District Gas Company which he attained in 1944, Mr. P. J. KEDGE has now been appointed Deputy Secretary, following the appointment of Mr. R. H. Epps as Secretary and Accountant on the retirement of Mr. E. J. K. Fussell. Mr. Kedge, who joined the Company in 1938 as Senior Audit Clerk and was made Assistant Accountant in 1939, is a Sub-Inspector in charge of the Specials at Harrow where he lives.

* * *

Two new District Managers of the Tottenham and District Gas Company have been appointed. Mr. D. W. GARNHAM, Industrial Department, Woodall House, has been made District Manager at Hertford in succession to Mr. R. P. THOMAS who retires under the age limit in June after 48 years' service. Mr. J. W. HOLDAWAY, Service Engineer at Southgate, has been appointed District Manager in succession to Mr. H. P. MORLEY, who has been appointed Mains Supervisor to the Hitchin Area.

* * *

Mr. G. H. A. TWIST retired on Friday from the post of Industrial Sales Manager of Lincoln Gas Department after 49 years' service in the gas industry. Mr. Twist, who served in the Doncaster Gas Department before going to Lincoln in 1919, was active in the formation of the Eastern Counties Gas Salesmen's Circle, of which he is a past Chairman and Hon. Secretary. He was for a number of years examiner at Cambridge for the Eastern Counties Education Committee, and for some time a member of the Industrial Technical Panel at Leeds.

Diary

May 7.—**London and Southern Junior Gas Association**: "Some Developments in the Application of Instruments and their Control in the Gas Industry," L. J. James (Electroflo Meters, Ltd.). Gas Industry House, 7 p.m.

May. 7—**North of England Gas Managers' Association**: Annual Meeting, County Hotel, Newcastle, 2.15 p.m. Address by R. D. Keillor.

May 8.—**Scottish Junior Gas Association (Eastern District)**: Visit to works of the Corporation Gas Department, Dundee.

May 8.—**Manchester District Junior Association of Gas Engineers**: "Central Heating," H. Partington (Rochdale); visit to Lancashire Tar Distillers' Works, Bootle.

May 10.—**Women's Gas Council**: Executive Committee. Gas Industry House, 1 p.m.

May 10.—**London and Counties Coke Association**: Technical Committee, Gas Industry House, 2.30 p.m.

May 11.—**National Federation of Gas Coke Associations**: General Committee. Gas Industry House, 10 a.m.

May 11.—**British Gas Council**: Central Board. Gas Industry House, 2.30 p.m.

May 11.—**Federation of Gas Employers**: Central Committee. Gas Industry House, 11.30 a.m.

May 11 and 12.—**Women's Gas Council**: Meeting at Carrs Lane Meeting House, Carrs Lane, Birmingham, 3 p.m. on May 11, 2.30 p.m. on May 12. Address "Bouquet for Housewives" and distribution of brochure "Hot Water Highlights," R. J. Gregg, Sales Manager, Ascot Gas Water Heaters, Ltd.

May 12.—**Domestic Development Committee**: Technical Sub-Committee, Gas Industry House, 10.30 a.m.

May 12.—**Domestic Development Committee**: Gas Industry House, 2.30 p.m.

May 13 and 14.—**Wales and Monmouthshire Association of Gas Engineers and Managers**: Annual Meeting. Prestatyn.

May 14.—**Federation of Gas Employers**: 30th Annual General Meeting of members in Scotland, Central Hotel, Glasgow, 2.30 p.m.

May 14.—**Junior Institution of Engineers**: Fifth Stevens Memorial Lecture, "Coal, Oil, Chemicals," Dr. J. G. King. Royal Society of Arts, Adelphi, 6.30 p.m.

May 19 and 20.—**Eastern Association of Gas Engineers and Managers**: General Meeting, Norwich. (May 19: Golf competition, reception and dance. May 20: Business meeting; paper, "Refractory Materials in Relation to the Manufacture and Use of Gas," A. T. Green, O.B.E., F.R.I.C., 10 a.m. Association Luncheon, 12.15 for 12.30 p.m. Broads trip, 2.15 p.m.)

May 22.—**London and Southern Junior Gas Association**: Visit to the St. Albans Works of the Watford and St. Albans Gas Company.

May 24.—**London and Counties Coke Association**: Finance Committee, 10.30 a.m.; Executive Committee, 11 a.m.; Central Committee, 1.30 p.m. Gas Industry House.

May 24.—**British Gas Council (Midland District Board)**: Inauguration of Discussion Group for Home Service Advisers, Grand Hotel, Birmingham, 2.30 p.m.

May 25.—**Southern Association of Gas Engineers and Managers**: Spring General Meeting, 2.30 p.m., Connaught Rooms, London.

May 26.—**Manchester District Junior Association of Gas Engineers** and **Yorkshire Junior Gas Association**: Joint visit to Messrs. Newton Chambers, Ltd. Thorncliffe.

June 1.—**Southern Association of Gas Engineers and Managers (Eastern District)**: County Meeting. All-day visit to the Dagenham Works of the Ford Motor Co., Ltd.

1948 "JOURNAL" DIRECTORY

In order to keep the Directory information up to date, the following alterations and corrections which have been notified during the past month should be noted in the 1948 issue of the "JOURNAL" Calendar and Directory:

Page 14.—BRECON.—There is a misalignment in fourth column ("Officials"). F. Dupont, *E. & M.*; and R. T. Prescott, *S* should be one line lower.
" 18.—CAERNARVON.—Delete R. B. Garside, *E. & M.*
" 36.—HELSTON.—L. H. Wendon, *G.M.*
" 48.—MANNINGTREE.—Delete R. W. Parsons, *S.*; add J. S. Hacon, *E., M. & S.*
" 58.—PLYMOUTH.—H. J. Board, *S.*, vice G. H. Bolton, who has retired from *S.* but remains a Director.
" 74.—THORNTON CLEVELEYS.—R. B. Garside, *E. & M.*, vice G. Fitton.
" 78.—WELLINGTON, Somerset.—Delete A. Thomas, *E., M. & S.*; add L. P. Ingram, *E. & GM.*; H. Tredwin, *Resident M.*; C. V. Tilney, *S.*
" 90.—FRASERBURGH.—T. A. Ross, *M.*, vice A. W. Farquhar.

News in Brief

Newport (Salop) Urban District Council has accepted a tender of Messrs. C. & W. Walker, Ltd., for the erection of a new gasholder.

The Annual General Meeting of the Irish Gas Association will be held at Cork on Sept. 14 and 15. The Golf Competition will probably be held on Sept. 16.

Lectures on Parkinson Gas Cookers were recently given by Mr. Robin Wilson (Parkinson Stove Co., Ltd.) to some 160 members of the Sales and Fittings Staff of the West Riding Group of Gas Companies at Wakefield.

At the Annual Meeting of the Bradford branch of the Women's Gas Council, Mrs. G. Waggett was elected Chairman in succession to Mrs. E. England, with Mrs. M. E. Saville as Vice-Chairman, and Miss E. Hart as Hon. Secretary and Treasurer.

The Executive Committee of the Midland District Board, British Gas Council, has decided to form a Discussion Group for Home Service Advisers in the Midlands. The inaugural meeting will be held at the Grand Hotel, Birmingham, at 2.30 p.m. on May 24.

Junior Employees of the National Cash Register Co., Ltd., were recently shown round the works of the Wandsworth and District Gas Company. The tour was preceded by an illustrated talk on "Gas and the Community" arranged by the British Gas Council

Mrs. Buchanan, Organizing Secretary of the Women's Gas Council is touring Scotland to meet the Scottish branches of the Council. Scotland has four branches—Dunfermline, Dundee, Renfrew, and Hawick—and although Scottish membership is small it is very active.

A Price Reduction of 2½% net has been made by Wellington Tube Works, Ltd., on all tubes and fittings manufactured by them and delivered in the home trade. In the event of any increases in the cost of raw materials and labour the position will have to be reconsidered.

The Final Copy of GRB 9, the full 34th Report of the Refractory Materials Joint Committee, has now been published. During the difficult days of the war it was possible only to publish a summary of this work which has hitherto been known as GRB 9(a). The Report is available at 1s. 6d. per copy (post free) from the Secretary, the Gas Research Board, 1, Grosvenor Place, London, S.W.1.

One of the Series of lectures organized by the Middlesbrough Gas Department for the benefit of their gas fitters, salesmen and technical staffs was delivered on April 15 by Mr. Arthur Forshaw, M.Sc., Chief Chemist, R. & A. Main, Ltd. His subject, "Improving the Breed," dealt with the story of gas cooking from the "dark ages" to present times, and with the aid of lantern slides his audience was able to follow the evolution of appliances from the early cylindrical cooker of over a hundred years ago to the modern Main rectangular types of to-day.

Stewarts and Lloyds, Ltd., announce a special discount to home trade customers of 2½% off the prices of about 90% of the steel tubes manufactured by them. The Company point out that the continuance of the discount depends on the cost of materials and labour and other relevant factors remaining stable. In the event of adverse changes taking place, it may have to be withdrawn. After the change-over from wartime to peacetime operations, increased production and the benefits of plant improvements have resulted in economies which have enabled this price reduction to be made. The Board has already announced its intention not to recommend an increase in the rate of dividend distribution in the current year.

PETROLEUM BOARD TO END

It has been officially announced that the Petroleum Board is to be dissolved on June 30. Branded petrol, however, is not likely to be re-introduced before the end of the year. The Board was set up early in the war at the instigation of the Government to ensure the maintenance of oil supplies. It was intended to dissolve the Board on Dec. 31, but when the basic petrol ration was suspended the Ministry of Fuel and Power announced its continuance for the time being.

A statement issued by the Board says that, at the request of the Minister of Fuel and Power, arrangements have been made by the companies to ensure maximum economy in the use of manpower and transport, and they have agreed not to introduce branded products for at least six months. Two advisory committees have been set up by the oil industry at the instance of the Minister of Fuel and Power to provide liaison between the industry and the Government.

The U.K. Petroleum Industry Advisory Committee will supply information to and co-operate with the Government in safeguarding the national interest in all questions relating to supply, refining and distributing of oil in the United Kingdom.

The other committee, the Oil Industry Advisory Council, will act in a similar capacity with regard to oil matters in general.

PARLIAMENTARY NOTES

by "Abaris"

ON April 15, the Member for Newbury asked the Minister of Fuel and Power if he would direct the electricity authorities to transform current on the three-phase system and abolish the single-phase which is involving farmers and others, who want to use electric power, in heavy expense and delay in the special wiring of electric motors.

Mr. Gaitskell said that there would be no direction because it was a technical matter that should be left to electricity boards to decide.

The Member for Ripon then asked if the Minister would be prepared to advise the boards to carry on the same system which was used by the private power companies, who, when they altered the supply, also altered machinery without cost to the consumer.

The Minister thought that it should be left to negotiation between the board concerned and the consumer, whereupon the Member for Newbury asked the Minister if he was aware that a great many users in rural areas needed more power to-day than they did five years ago, and that the problem was a growing one.

Mr. Gaitskell replied yes, and added that the Government was anxious to provide farmers with electricity, but that the particular point about the system to be adopted was a highly controversial matter and should be left to the experts.

Use of Windmills

The Member for Torquay asked the Minister of Fuel and Power for how long he proposed to prohibit the use of windmills to produce power for lighting purposes. Mr. Gaitskell said that no prohibition existed, but that it was illegal to use electricity for business advertising. He considered that if they were to go in for wasting electricity, there were many better things they could do with it before advertising. The Member averred that it was not for advertising but for the purpose of providing brighter streets and more cheerfulness. Mr. Gaitskell: "If it is not for the purpose of advertising, it is not prohibited." Another Member then asked why the Minister was preventing people from lighting up windows when they were using no fuel at all. At this, Mr. Gaitskell said that it was impossible to draw a line between the use of batteries, windmills, diesel generating sets, and mains for the purpose; and if they were to relax under one of those headings, it would be extremely difficult to enforce the regulation under the others. Immediately, the Member for Kingston asked if the Minister's answer meant that one could manufacture electricity as long as one did not use it. Mr. Gaitskell: "The hon. Member should know that electricity cannot be manufactured without being used up."

Coke Supplies

Coke supplies had a mention on the same day when the Member for Taunton asked if the previous maximum of 56 lb. of coke could be obtained off the ration; this, in view of the considerable stocks of coke now available. Mr. Gaitskell said that he could not agree to the increase because the Government wanted to develop the export of coke; nor could he agree that the Member's proposal was the best way of disposing of supplies in the home market.

The Member then added that anyone could get a bigger ration merely by going to the seller several times. Mr. Gaitskell ended the episode thus: "My hon. Friend's proposal would seem to lead to the conclusion that we should abolish the 28 lb. limit altogether."

The Member for Spen Valley asked the Minister of Fuel and Power what were his proposals for demonstrating United States methods of full house heating; to what extent fuel economy was achieved by such methods; and whether the necessary equipment was now being manufactured in this country. The answer was that arrangements were being made for whole house heating by different methods in 48 houses on selected local authority estates. No results would be revealed until the demonstrations had been in operation for 12 months. All the heating equipment to be employed was being manufactured in this country.

A Member asked why the cost of opencast coal per ton was seven times the cost of quarried limestone, despite the fact that methods of obtaining both were largely similar. Mr. Gaitskell said that limestone seams were usually 20 times as thick as coal seams, more earth overlaid the coal, and earth had to be replaced.

On April 20, the Member for Hornsey asked the Prime Minister if he would make a statement about the future salaries and emoluments of the chairmen and members of the boards of the nationalized industries, in view of the uncertainty which existed on the subject. Mr. Attlee informed the enquirer that no alterations were at present being considered. The questioner then followed with: "Do I understand that the threat made by the Secretary of State for War is just another irresponsible statement?"

Mr. Attlee: "I understand from the report I have seen that the Secretary of State for War expressly said it was not a threat."

One of the written answers concerned quick-freezing plants. raised by the Member for Canterbury, who wanted to know if the Minister of Food would give a list of the fruit and vegetable quick-freezing plants in operation in England and Wales, or likely to be at work by the end of the prseent year. Mr. Strachey: "I am sending the hon. Member a list of 32 fruit and vegetable quick-freezing plants licensed to operate in England and Wales. All these are expected to be in operation by the end of 1948."

The Member for Horncastle asked the Parliamentary Secretary to the Admiralty what steps were being taken to improve the cooking facilities in the Royal Naval Hospitals at Portsmouth. Chatham, and Devonport and the reply by Mr. Edwards showed that the first two were getting additional equipment; the position at the last was under consideration.

The Member for East Surrey asked the Minister of Fuel and Power what the increased consumption of fuel oil was, following the conversion of industrial plant in 1945; the cost in hard currency of bringing into the United Kingdom the additional fuel for conversions, &c. It was estimated, said Mr. Robens, that the consumption of fuel oil by industrial plants increased by approximately 2.2 million tons between May, 1946, and the end of March, 1948, as the result of the conversion schemes. Up till April, 1947, no dollar expenditure was incurred, but since then there had been imports from dollar sources to the value of about £3.8 million.

A most successful visit was paid on April 21 by the Eastern District (Eastern) Circle to the Works of R. & A. Main, Ltd., and Thomas Glover & Co., Ltd., at Edmonton. The above group was taken at the conclusion of the visit outside the main offices of R. & A. Main, Ltd.

MANCHESTER DISTRICT ASSOCIATION OF GAS ENGINEERS

Presidential Address* of JAMES MacLUSKY, M.Inst.Gas E., F.Inst.F.,
Engineer and General Manager, Halifax Corporation Gas Department

IT is customary for a newly installed President to thank the members for the honour done to him, but I am particularly conscious of the honour since I am one who has followed his father into the position of President. I had hoped that my father would have been present to see me installed in this Chair but as you know he passed away as recently as Oct. 30 last year.

It is interesting on looking back through the list of our past Presidents to see how the family tradition in the gas industry has been maintained. We had Dr. Thomas Newbigging as President in 1879 and his son, J. G. Newbigging, President in 1914-15. Mr. William Carr, then Gas Engineer of Halifax, was President in 1880, his brother Mr. Isaac Carr, of Widnes, President in 1896 and the latter's son, Colonel W. M. Carr, O.B.E., President in 1931. Mr. E. H. Hudson, of Normanton, was President in 1920 and his son, Mr. Norman Hudson, President in 1944. My father was President in 1929 and now I occupy the Chair.

I have found very little time available for the preparation of this address and during the period that I have been taking rough notes I have found that quite a number of the things which I could have said have already been said by others. I am attempting to give you the views of one who was brought up in the gas industry and who has been in charge of two undertakings, one a comparatively small company and the other a comparatively large municipal undertaking, and who, having experienced two different types of policy is now faced with the necessity of shortly experiencing yet a third type.

Education, Training, and Prospects

The young men of my generation had not the same facilities for technical education as those enjoyed by young men of to-day. An apprenticeship at an engineering works and six years of attendance at evening classes (with no time off during the day for study) was not the easy way of obtaining technical training and qualifications. The status of the gas engineer was in real danger of being devalued in the minds, not only of the general public, but of our municipal employers and it was essential that the Institution of Gas Engineers should raise the professional status of the gas engineer by making the curriculum and examinations equal to those in the other great professional engineering institutions.

The Area Gas Boards and the Gas Council, which are proposed under the Bill now before Parliament, are to be faced with resonsibility for the training of personnel, but in all probability they will, as this is part of the policy of His Majesty's Government, allow for the training of men from the ranks to fill positions in the administrative, professional, and technical branches.

One of my reasons for mentioning this question of promotion from the ranks is that it involves financial incentives to back such promotion. Though most men value improved status there must be the means of maintaining that status and to fulfil the obligations which those of lower status place upon us. What financial incentive is there at present for many young men earning a good wage as first-class craftsmen or in the lower supervisory grades to undertake a five or six year course of study which will qualify them for positions in the lower professional or technical grades and so hope ultimately to reach executive status.

On the distribution and fittings side of the industry there is a very definite shortage of young men qualified for promotion though the ladder of promotion has been somewhat easier to climb than on the gas production side.

Complaints have been made that there is little inclination for public school or grammar school boys nor even I believe for university graduates, to seek the privilege of entering our industry. No glamour or suggestion of romance exists as in the case of electricity, electronics, aeronautics and other industries. Engineering firms associated with the gas industry have not to my knowledge instituted pupil apprenticeship schemes of the "sandwich" type involving studies for a University degree or for the less academic National Professional certificate. If the demand existed it would doubtless be met.

I am aware that some of the London and Southern gas companies have had for many years a system of premium pupilage in some cases, and articled pupilage in others, and that University graduates have been accepted on a three years' course of training with financial allowances during such training generous enough for reasonable maintenance. Many gas undertakings, including my own, give all apprentices and juniors two afternoons off duty in order to attend classes and they pay class fees conditional on attendance being made at two evening classes per week. The examinations of our Institution have been successfully passed by many men in this way.

I feel there is a real danger in having professional or technical officers in the same organization as clerical officers. There is no comparison between these grades and no comparison should be attempted.

As one who has served a Light, Heat, and Power Committee which has controlled both gas and electricity undertakings, I have been in a position to note the comparative ease with which much higher salaries are obtainable in the electricity industry than in the gas industry and how the operation of Joint Board scales of salaries has benefited the electrical technical men even down as low as switchboard attendants in the electricity station, and mains engineers on the distribution branch.

I hope that when the new Area Boards for the gas industry are in operation, the spirit of brotherhood and mutual help which has grown up over a period of 120 years in our profession will continue. After all, we are in the industry because we believe in it, and in the past the gas engineer has felt a proprietorial interest in his plant, using the possessive personal pronoun almost automatically.

I hope that there will be an organized system of promotion in the area Gas Boards. I know some gas engineers do not relish the prospect of being moved round at the behest of those in authority, but in the past many gas engineers have striven to move round and upwards. Many a young man has developed initiative, quick decision, and business acumen in charge of a small works and so earned the right to be promoted to a large works. In a small works the engineer is inevitably brought into very close contact, not only with the details of gas production and distribution, but also with the human material with which he has to deal. I recognize, however, that professional qualifications must be obtained first. The experience of management superimposes commercial and administrative wisdom which is not readily learnt from text books.

I hope that the Area Boards will copy the example of the best holding corporations in the gas industry and insist on the maximum possible amount of decentralization. Policy must always be determined at the highest level, but as has already been said by others, the actual operation of our service depends on personal contact in the districts. In all probability we shall be faced with joint Works Committees or Councils, and we are certainly going to be faced with consultative Councils which are to hear complaints from all sources, and who will have the right to pass such complaints or even suggestions for improvement direct, if they so desire, to the Minister of Fuel and Power.

Co-ordination of Gas Production and Technical Effort

At the moment many undertakings are faced with shortage of carbonizing plant and are having to use carburetted water gas to supply base loads. The withdrawal of the gas oil subsidy was a heavy blow and resulted in an increase in the price of gas by those undertakings who were compelled to continue the use of gas oil. I cannot help expressing the opinion that it would be much better to continue a subsidy on gas oil which assists in the production of gas fuel, and, if necessary, to tax oil which is used directly as a fuel and takes the place of home produced fuel. Imported oil before the war was a very serious competitor with gas particularly in the industrial field. It is the expanding demand for gas resulting directly or indirectly from the industrial effort, and the export drive, which is causing increased demands for gas and in turn necessitating the use of imported gas oil to make that gas.

Supplies of coke oven gas have for many years been taken by gas undertakings either by direct purchase or from a grid main. The gas-works has usually maintained horizontal or vertical retorts plus carburetted water gas plant to meet peak loads or emergencies. The coke oven gas supplies have had to be taken regularly and the coke ovens, therefore, have been regarded as the base load plant. I have been interested to hear statements that the latest coke oven plants arranged for dual firing with producer gas or coal gas are much more flexible in meeting varying demands for gas than our standard vertical retort plants. Experiments have proved that the switch over from producer gas to coal gas firing can be done very easily. The net production of coke is variable to a small extent by varying the amount of coke used in the production of producer gas, but the net produc-

* Presented at the Annual Meeting, Manchester, April 30, 1948

tion of coal gas is variable within large limits depending on whether or not this gas is used to heat the ovens. The value which is placed on the coal gas at the ovens is an important factor. If this system becomes more widely used, then the gas-works vertical retorts or other plant built in large units may well become the base load plant and the coke ovens the peak load plant.

As gas engineers, we are not vitally concerned with arguments as to ownership of the coke ovens, but we must be concerned as to whether the coke ovens are to be regarded as a main part of the gas producing plant of the country, and as to whether they shall be worked in the future so as to meet the requirements of the gas supply industry, rather than be operated solely to meet variable demand for hard coke. I visualize that the gas industry will be able to play its part in the marketing of all coke suitable for industrial, commercial and domestic purposes.

I believe that qualified gas engineers are valued highly in the coke oven industry and I would suggest our Chartered Institution should not only open its gates to admit all qualified coke oven carbonizing engineers but should issue a sincere and hearty welcome. Co-operation on the professional level would appear inevitable and interchange of information will be vital. Gas engineers on the production side are carbonizing engineers and no other Institution should be considered necessary. Our Institution could, of course, if thought necessary at any time, copy the example of other professional institutions in forming sections which are able to concentrate on their specialized branch of work. Our Institution can never be so large in numbers as others which include men engaged in many auxillary trades, but I suggest this is all the more reason for all qualified men to be admitted, so that added strength and prestige may be gained by the Institution.

Electrical Competition

Unfair competition by electricity has been a source of irritation to the gas engineer for many years and more particularly to those engineers operating a gas undertaking in a Borough or City where the electricity undertaking has been under the control of the municipality. The Halifax Electricity Undertaking, by means of its maximum demand charge and a commodity rate allied with a coal clause addition, has been able to charge a comparatively high rate for industrial power and so subsidize an uneconomically low rate to domestic consumers who use more than 300 units per quarter. Even to-day this rate in Halifax is 0.3d. per unit, being the same as before the war. For the last two or three years the cost of coal per unit generated has been in excess of 0.3d. and the cost of generation has exceeded 0.5d. per unit. The domestic consumer therefore has not been paying for the whole of the coal used in making the unit which he has used so extravagantly (often in a portable electric fire at times of peak demand) and has paid nothing towards the other costs of generation or distribution.

The last report of the Central Electricity Board takes credit for having reduced the average price of electricity to 1d. per unit notwithstanding heavy increases in the cost of coal during the years that it has been the authority for electricity generation. The public do not seem to be aware of the cost of producing electricity and the statements that there must be an increase in price have come as a shock.

I cannot understand why the Ministry of Fuel and Power has continued to permit such a high maximum rate of 5d. per unit for electricity, and a low commodity rate of 0.5d. with a reduction to 0.3d. per unit where over 300 units per quarter are used. The imposition of a minimum charge per quarter, and a low standing charge based on rateable value has been designed to force as many people as possible on to the two-part tariff. While many years ago this might have been justified on the grounds that the peak load was for lighting in the evening, we have ample evidence of the fact that an even greater peak load now occurs in the morning. The electricity industry has put itself in the position of selling expensive peak load current to domestic consumers at a cost below that of the coal used to make it, and is now having to install new generating plant with increased capital charges. The mild weather in February and March of 1948, resulted in a decreased demand of 20% for electricity in Halifax and this clearly indicates a reduction in the heating load and not the cooking load.

The gas industry has suffered, because of being an older industry, particularly in relation to domestic cooking appliances. Our electrical competitors found consumers using obsolete gas cookers usually supplied on low simple hire terms and were able to have several thousands of these removed and substituted, also on simple hire, by a more modern enamelled electric cooker of smaller oven capacity and of much less speed in operation, but which had all the appearance and smartness of modernity. It is useless to criticize the policy of the gas industry in that having laid out so much capital on these black cookers, it was unable to face the loss involved in scrapping them immediately and the cost of modern type cookers, which would have met this competition effectively.

Efforts have been made by persistent propaganda over the radio and in the press to imply that the electrical cooking load is very high. We gas engineers know that the proportion of gas cookers to electric cookers in use depending on the locality is in the region of 4 or 6 to 1, and this figure has been confirmed by independent investigators.

The records which have been published show that between the hours of 12 noon and 2 p.m. there is a very substantial drop in the consumption of electricity. In Halifax our peak load for gas both in summer and winter is between 12 noon and 1 p.m. and our morning peak load is very heavy. I have no hesitation in saying that this load is caused firstly by the cooking of meals and secondly by the tremendous demand for the boiling of water necessary to provide hot beverages in homes, restaurants, hotels and canteens, and further that it would be impossible for the electricity industry to supply this demand.

We have been promised by the Ministry that a National Fuel and Power Committee is to be set up to investigate the problems involved in the formation of a national policy. I feel that the greatest control of the usage of any fuel is in the price structure involved. In the gas industry the minimum price charged for gas is always more than the average annual cost of production right up to the inlet of the holder and usually covers a substantial part if not all of the cost of distribution. The maximum price is seldom more than three times this minimum price. We have realised that we require periods of lower demand in order to enable our holders to be filled partially after periods of peak demand, but we have also realised that we must at all times allow for the fact that if we sell gas for any specific purpose at a rate which does not bear its proper share of manufacturing, distribution, management and overhead charges and this particular load increases greatly, then other classes of consumers will have to make up the deficiency involved.

The most obvious way to prevent unfair or uneconomical competition between the Electricity and Gas Area Boards is for the Ministry of Fuel and Power to stipulate by Order or Regulation that the competing commodities shall not be sold to anyone for any purpose at less than the average annual cost of production (*i.e.*, the price payable to the generating authority for electricity or the price per therm delivered into the gasholder) plus some part of the cost of distribution and further that the maximum price charged to any consumer shall not be more than three times this minimum price. I suggest that flat tariffs with discounts, block tariffs and two part tariffs can be operated effectively within these maximum and minimum limits. It is very noteworthy that electricity supply companies, particularly those serving large county areas, have not generally adopted the very unfair methods of competition which have been used by municipal electricity departments.

I wish to make it quite clear that I do not feel pessimistic in regard to the present state of our industry. I believe that we have won through and that our prospects are very good. In most of our north country industrial towns the sales of gas for industrial and commercial purposes of all kinds have increased and much greater business could be obtained had we the gas making plant available. In the domestic field, too, we are now finding a growing number of consumers who, having tried electricity for cooking purposes are now reverting to gas cookers because of their inherent merits.

Administration and Finance

The system of extending the period of loans on municipal gas undertakings was designed to make the annual charge for repayment of capital low, but this system was used in many cases to permit of large sums being transferred to the relief of the general rate fund, instead of being transferred to renewal or reserve funds. The time arose when it was necessary on grounds of obsolescence to replace carbonizing and other plants on which interest and sinking fund payments were still being made. In one case a new vertical retort plant had to be installed out of revenue since the plant which was demolished in order to make room for the new one, still appeared in the capital account. As comparison, I know a small statutory gas company, whose dividends are fixed at maximum rates by the special Act, which over a period of years has put as large an amount as possible for all new extensions of plant and mains through revenue account and steadily depreciated plant on capital account, with the result that to-day there exists a substantial credit on capital account, a very low capital per million cu.ft. of gas sold, and a reserve fund which is as large as the private Act permits. The price of gas of the small Company is lower than that of the larger municipal undertaking to which I referred.

Since as far as I can see the new area Gas Boards are to function very much on the same lines as large maximum dividend companies, I cannot but feel that the financial structure will be very sound and that continuity of policy and the provision of ample renewal and reserve funds will enable steady commodity prices to be maintained, and plant to be maintained in a high state of efficiency.

One of the advantages should be the quickness with which decisions can be made on technical and commercial matters, and

the freedom from purely local interests, which can be restrictive on development.

Consumer Service Charges

One of the policies which varies between one undertaking and another is that of consumer service and maintenance of consumer appliances. In municipal gas undertakings consumer service has developed until the gas consumer expects the gas department to give entirely free labour in the cleaning and adjusting of appliances and in the attention to small escapes of gas, though, of course, most undertakings make a charge for any new parts found necessary. This practice has in many cases caused resentment on the part of the master plumbers who consider that the gas undertaking is taking away business which they regard as being their prerogative. The gas undertakings have argued that if consumer service had been left to the master plumbers and if they had charged their usual rates for all labour employed then the gas undertaking would not have been able to maintain, far less expand, its domestic load. Many gas undertakings find these consumer service charges to be a heavy item in the cost of selling gas.

I have heard that one large gas company in the North West has decided to hand over the fixing of all domestic gas appliances to firms of master plumbers, presumably on contract terms. Does this indicate the possibility of a general change of policy in the gas industry? Would this policy be permitted under municipal ownership?

I can foresee that strict regulations would have to be adopted in order to cover both technical and safety considerations involved in the installation of gas appliances and that a training scheme for operatives would have to be instituted also.

Our competitive industry does not have anything like the same consumer service charges as we have and the electrical contractor works on very amicable relations with the electricity department, acts as a business getter and salesman for them and, of course, charges direct for all work done by him for the electric consumer. Once again the gas industry is suffering by reason of being the older industry and by reason of the traditions which have been built up over such a long period of history.

Coal Supplies

Every gas engineer is very alarmed at the prodigal waste of caking bituminous coals which is still being permitted and information shows that these will be exhausted long before the reserves of non-caking boiler and domestic coals. Industrialists are complaining of the difficulty in obtaining efficient combustion of caking slacks and coals used in Lancashire or other boilers for steam generation, and householders are complaining of the tarry and smoky coals which they are compelled to use. These caking bituminous coals are absolutely essential for the production of coke for blast furnaces, cupolas, and for steel production as well as for the production of smokeless fuel.

Since carbonisation of these caking coals produces smokeless fuels and primary products, for a large variety of chemical products and since all these by-products are exportable, we must hope that one of the aims of the new National Fuel Policy will be the conservation and wise use of all types of coal and all types of fuel. We can claim that by carbonizing coal we produce gas and by-products which have a much greater total financial value than the raw coal used by us. We can claim also that in creating this enhanced value we have paid out a substantial sum in wages. The large quantity of gas used in industry, particularly in the steel and textile industries, also creates greater export values.

Labour Difficulties

I have been interested to see the discussion which is taking place in regard to incentives for increased production by labour. In all trades there seems to be evidence that the introduction of bonus schemes and piece work, enables a man to produce a very much larger output of work than where there is a fixed rate of pay. This seems to show that the financial incentive is the greatest incentive available, and no management can object if by use of such incentives the cost of producing any unit of work is thereby reduced.

In our industry the prospects of piece work and/or bonus schemes are very limited, but I know of one works where the payment of a fixed sum of money to a gang of men for the emptying and refilling of purifier boxes resulted in the work being done in a fraction of the time and at no more cost. It was very significant that the majority of the men employed insisted that certain men named by them should be removed from the gang since they would not pull their weight.

Work such as meter reading and coin collection and certain classes of gas fitting work could well be done on a piece rate or bonus system, and I have no doubt that certain undertakings are already so doing. The country is being exhorted by the Government to increase production and we as gas engineers realise that there is room for increased production per man in our industry. I cannot help commenting that in two countries so diametrically opposed in ideology as the U.S.A. and the U.S.S.R. incentive schemes have been found necessary. In the U.S.S.R., the incentives do not only cover money but increased food, holidays and other privileges. I believe, from what I have read, that in the U.S.S.R. the technician and the business executive receives very much higher rewards for his skill and organizing ability than is now the case in this country, but the punishments for failure are, of course, also greater.

We are now beginning to see something of the shape of things to come and we are glad to notice that in the framing of the Nationalization Bill now before Parliament some attention was given to the recommendations of the British Gas Council. We recognize that existing gas supply areas have in many cases little to commend them, and that integration of gas undertakings had become inevitable.

I feel that the success of the gas industry will depend in the future, just as much as it has done in the past, on the loyalty, enthusiasm, and personal initiative of the gas engineer, supported as ever by his colleagues in the administrative and commercial branches.

Before my year of office as President has been completed, I anticipate that the nationalization of the gas industry will have become an accomplished fact.

Once again I thank you for having elected me to this Chair, and I hope that I can maintain the traditions of service which have been created by those who have gone before me.

HARROGATE CO-PARTNERS

Co-partners of the Harrogate Gas Company and their friends attended a Co-partnership Social at which they were welcomed by A. I. Seaton, Director, who announced the bonus for the year. Mr. A. McDonald, General Manager, also added his personal welcome to all co-partners, and said the Chairman of the Company, Colonel W. M. Carr, had asked him to convey to all his good wishes for a very happy evening. Colonel Carr, he said, had intended to be present, but had been called away to London in connexion with nationalization.

Mr. McDonald said that since they last met together on a similar occasion in the autumn of 1946, the Company had made very good progress. There had been, and there still were, innumerable difficulties to overcome, some of which had at times appeared insurmountable. The shortage of materials particularly still was at the moment severely handicapping their activities. Enquiries for additional plant had been met with the reply that five years must elapse before they could have delivery. Nevertheless, they had not been dismayed, and the Company had continued to expand. Thus, the output of gas for 1947 constituted a record for the Company reaching a figure of 1,055 million cu.ft. The record maximum day's output was almost 4¼ million cu.ft. Of the 70,000 consumers in the group, 26,000 were within the Harrogate area. Similarly out of 567 miles of main, 240 miles were within the Harrogate area. A good augury for the future lay in the fact that sales of appliances last year also constituted a record, amounting to no less than £53,000—an increase of 53%—as against £115,000 for the whole group.

With regard to the co-partnership scheme he gave the following figures: Membership, 280; total bonus, 1922-1947, £57,600; stock held, £12,165; bonus account, £25,900; comparative bonus, 1922, £1,318; comparative bous, 1947, £4,306. Commenting on nationalization, Mr. McDonald said the Bill proposed many alterations in the structure of the industry, but there was one aspect which vitally affected each and every one; he refered to co-partnership. Under the Bill as it stood, co-partnership would come to an end, but every effort was being made nationally to have this part of the Bill revised. Whether they agreed with nationalization or not, would not matter much once the Bill became law. What did matter, was that it would fall to their lot to carry out its provisions, faithfully and loyally, as they had served the Company in the past.

Mrs. F. W. Allum presented the prizes to the winners at whist, and a happy evening was devoted to dancing.

Strong Objection to the Budget Increase in purchase tax on kitchen essentials, which will mean a considerable addition to Glasgow's expenditure on houses at present under construction, was voiced at a meeting of Glasgow Housing Committee. It was decided to make representations to the Secretary for Scotland and to refer the matter to the Convention of Royal Burghs and the Counties and Cities Association. Councillor James M'Innes, Convenor, said after the meeting that the tax of 66⅔% on kitchen equipment would involve the Corporation in extra expenditure of between £70,000 and £80,000. In addition, the raising of the tax on gas fires from 66⅔% to 100% would mean an increase of about £1 on the cost of each fire, representing a total additional cost of £4,000. He estimated that the new imposts would mean an additional charge of approximately £20 per house on 4,000 houses.

THE GAS BILL IN COMMITTEE STAGE

(*Continued from page 223*)

AT its 20th sitting on the morning of April 27 the Standing Committee on the Gas Bill agreed on a division by 20 votes to 12 that Clause 27, which defines the methods of compensation for municipally owned gas undertakings, should stand part of the Bill. Lieut.-Colonel W. E. Elliot (C., Scottish Universities) questions the wisdom of having the decentralized administration of £80 million worth of gas undertakings removed from the control of the elected bodies of this country and transferred to bodies nominated by the Minister of Fuel and Power. He gave several instances of municipal undertakings being acquired on very favourable terms, including, for example: Birmingham (worth £6,750,000), £2,500,000; Leeds (worth £2,750,000), £500,000; Manchester (worth £6,288,000), £918,000; Edinburgh (worth £3,459,000), £632,000. Carlisle, with £444,000 worth of property, was being taken over at a payment of £32,000. Carlisle, being a thrifty northern town, had done its best to repay most of its loans. If the Carlisle local authority had sold its undertaking to a gas company it would have received certainly £500,000, and possibly a good deal more, and afterwards that private company would have been compensated by the Government, who now refused to admit the validity of the process if one of the intermediate steps was left out.

Mr. Glenvil Hall (Financial Secretary to the Treasury) said the Government could not accept the argument that municipally-owned undertakings should be treated as though they were not public bodies. If they paid full compensation in the sense that the Opposition intended, it would mean that they would give to the taxpayer in one capacity compensation which they were taking out of his other pocket in the other capacity. The ordinary consumer in Birmingham, for example, would not be conscious that he had lost anything, or that some sort of wealth had been taken from him. He would not notice the change except that it was hoped there would be greater efficiency and presently cheaper gas because of the wider area and the fact that they were reducing overheads.

On Clause 28, providing for further compensation to local authorities in respect of severance, Colonel Crosthwaite-Eyre (C., New Forest) proposed that the total sum allocated for this purpose should be raised from £2,000,000 to £5,000,000, but on a division the Committee adhered to the original figure.

Composition of Composite Companies

On Tuesday afternoon Mr. H. V. Raikes (C., Wavertree) moved an amendment to Clause 29 (compensation to composite companies), with a view to obtaining a fairer basis for compensation for composite companies than existed in the Bill as it stood. Composite companies, he said, were more hardly and seriously hurt by severance than local authorities were, and their overhead charges would be put utterly out of gear.

Mr. Gaitskell opposed the amendment and it was defeated.

Colonel R. S. Clarke (C., East Grinstead) moved an amendment to Clause 32 (control of dividends, interests, and other payments) designed to exclude statutory companies from the operation of the clause. The clause as it stood, he said, penalized companies which were conservative and those who had been handicapped because of some delay in obtaining the permission of the Minister for an increase in the price of gas for 1946, which had happened in certain cases.

The Solicitor-General, opposing the amendment, said very few companies would be penalized. "We do not want to be unreasonable in this matter," he added, when resuming the debate on the amendment on Wednesday morning. "If it can be shown that there is real hardship in individual cases we will look at this question again, but I do not want to make any promise that we cannot fulfil, or that we will revise our views on anything we have said about Clause 32 in other directions."

Mr. Heathcoat Amory (C., Tiverton) said that all the Opposition were asking was that the statutory companies should be permitted to do what they had been authorized to do in the past; no more and no less. The provisions as they stood in the Bill were unnecessary and unjust, and when the Solicitor-General came to reconsider them he hoped he would interpret what he had called "undue hardship" fairly widely to mean what they thought it ought to mean—unfairness in any degree.

The amendment was, by leave, withdrawn.

Colonel Crosthwaite-Eyre moved an amendment which sought to establish that where interest or dividends had been paid since Jan. 23, 1948 (the date of publication of the Bill) it should be "pursuant to a resolution of the directors of the company" passed after that date. Directors, he said, were held personally liable if any dividend was paid exceeding the limits laid down in the Clause, but in the absence of the suggested amendment it was not clear whether it was intended to refer to a resolution passed at a board meeting at which the directors considered what dividend they were to recommend or to the resolution at a general meeting at which the shareholders accepted the recommendation of the directors. Details were available of at least seven cases where companies' time schedules were such that recommendations were posted before the date in question, but were not confirmed until some days after that date. The provision had been called protection against dissipation of assets by the directors, but that was "nothing but sheer humbug and nonsense."

The Solicitor-General replied that in any case the directors should not recommend an excessive dividend. If they did so and if, under the terms of the articles of the company, they could be held to it by the shareholders at a general meeting, the directors should not make a recommendation of that sort. If directors made a recommendation in excess of the amount subsequently shown by the Bill to be the permitted amount it would be open to the directors to withdraw the recommendation which, because of the terms of the Bill, could not be implemented.

Mr. Brendan Bracken (C., Bournemouth) said it was perfectly legal and right for the directors to declare a dividend before the Bill was published, and the Solicitor-General now said they could avoid the consequences of their action by calling the shareholders together and saying they would not after all pay the dividend they had announced. The directors had acted perfectly legally before the Bill appeared, but when it was published they apparently committed an illegality. "This is a sort of Wild West justice; better still, it is the People's Court," continued Mr. Bracken. "I do not believe the Government have seriously considered what they are doing. The making of retrospective offences in this country is a development of which none of us would approve."

Mountain Out of Molehill

Mr. Gaitskell said Mr. Bracken built up into a mountain what was a very small point of drafting, and had tried to make out that there was a tremendous design by the Government to penalize directors. The only difficulty was where directors had passed their resolution before the Bill was published and the actual resolution of the shareholders was not taken until afterwards. No difficulty should arise even in such cases, but if there were any cases of difficulty they would look into them and make any necessary amendment.

Mr. J. Foster (C., Northwich) considered it monstrous that people should find that as a result of a provision in a Government Bill of which they could not have any knowledge, they had committed a crime; it could not occur to them that they were committing a crime.

The Solicitor-General said three or four times already they had said they were ready to reconsider the position of directors in such a situation, and he accused Mr. Foster of wasting time. After a sharp exchange the Committee divided and the amendment was defeated by 12 votes to 20.

The Financial Secretary to the Treasury moved amendments to enable higher dividends to be paid where recent issues of stock had been made at a premium, and had been subscribed for in expectation of a certain dividend. He had in mind a case where there had been an issue at 111¼ with an announced prospective dividend of 6%. "It will permit gas companies who have made issues of that sort before the Bill was published to pay the rate laid down when the issue was made," added the Minister.

The Solicitor-General rejected an Opposition amendment to allow arrears of preference dividend to be made out of any accumulated net revenue. Where preference dividends had fallen into arrear, he said, it was obvious there must have been a deficiency of net revenue, and the Government could not entertain arrears being met out of other funds.

On Wednesday afternoon Colonel Clarke moved an amendment to Clause 33 (final payment of dividends and interest) to provide that in appointing an auditor in the case of any undertaker the Minister should first offer the appointment to the auditor or one of the auditors who signed the last balance sheet of the undertaker.

Mr. Robens, Parliamentary Secretary to the Ministry of Fuel and Power, agreed, on withdrawal of the amendment to insert at the report stage a Government amendment to substitute for an auditor "appointed by the Minister" one "appointed by the President of the Institute of Chartered Accountants" to ascertain a company's final financial position.

Under the same Clause, Mr. Raikes moved an amendment empowering shareholders to grant compensation to "any person as compensation for the loss of remuneration or employment with the undertaker or in recognition of past services rendered to the undertaker." The amendment, he said, covered directors

and past and present employees of a company, but referred only to funds which were the property of the undertaking during the last financial period.

The Solicitor-General said they could not agree to this very wide amendment, which sought to make a drastic alteration in the form of the Bill, especially as its object could be sufficiently achieved under the Bill as it stood.

The amendment was defeated by 12 votes to 21.

Clause 34 (income tax provisions) was agreed to without amendment.

Power to Obtain Information

On Clause 37 (power to obtain information), Mr. Gaitskell moved an addition as follows:—

"(3) Regulations shall require the Area Board concerned or, as the case may be, the Gas Council to produce such books of account, records and documents as may reasonably be required—

(*a*) by any person who is a party to any agreement or lease disclaimed by the Board or Council, for the purpose of deciding whether to refer to arbitration under this Act any question arising with respect to that agreement or lease under Section 21 of this Act, or for the purpose of preparing his case on any such reference; or

(*b*) by any person who is a party to any claim or application by the Board or Council under Section 32, 35 or Section 36 of this Act, for the purpose of preparing his case in connexion with that claim or application;

and to provide facilities for the examination of any such books, records, and documents, and the taking of copies thereof and extracts therefrom; and the regulations may provide, in cases where any material documents remain after the vesting date in the possession of an undertaker to whom Section 18 of this Act applies or come into the possession of any person to whom property which vests by virtue of this Act has subsequently been transferred, for extending the requirements aforesaid to that undertaker or person.

(4) The Area Board in whom property, rights, liabilities, and obligations of any undertaker to whom Section 18 of this Act applies vest by virtue of this Act shall make available to the undertaker such facilities for the examination of and making of extracts from or copies of books, records and documents relating to the gas undertaking of the undertaker as he may reasonably require for the purposes of any arbitration proceedings under that Section or for purposes arising out of the carrying on of the business of the undertaker, and such services of officers of the Board as the undertakers may reasonably require to enable him to make use of those facilities."

The Solicitor-General said that the object of the amendment was to ensure that persons who might be parties to applications under the various Clauses which might give rise to proceedings before the tribunal should have access to the necessary information for the purpose of enabling them adequately to prepare their cases and to develop their defences. The amendment required that access should be given to books, records, and so on, and that facilities should be given for copying. It provided that a composite company that had had its gas undertaking taken away by an Area Board, in order to continue its remaining enterprise might have access to documents which might be in the possession of the Area Board.

Mr. Bracken said that the explanation given by the Solicitor-General was entirely adequate.

The amendment was agreed to.

GAS INDUSTRY ADMINISTRATION AND NATIONALIZATION*

By RONALD D. KEILLOR, M.Inst. Gas E., M.Inst.F.

SOME administrative problems arise from the transfer of company and municipal gas undertakings to national ownership in accordance with the terms of the Gas Bill.

The writer believes that from a knowledge of the existing set-up of the gas industry's widespread administrative organizations one can, with some assurance and authority, forecast to what extent these organizations will require adjustment and recasting to suit the new structure of administrative control under national direction. With this constructive object in view the following observations and diagrams are submitted as the basis for discussion and criticism in the belief that only by facing these problems realistically can the most satisfactory solutions be found.

Local Aspects of Transfer

(a) COMPANY UNDERTAKINGS.

The existing local administrative machinery of these undertakings has in most cases been progressively built up to embrace all necessary commercial and technical activities associated with the provision of an efficient gas supply. It may be assumed that generally speaking all officers of the company undertakings will at the outset be required to carry on their normal duties in order that there will be a minimum of disturbance of service to the consumers. Later the Area Boards will determine to what extent district integration or centralization will affect staffing arrangements.

The high level commercial and technical direction of the companies, however, will be in the hands of the Area Boards, as will be financial control; therefore the directors will cease to function as such except in so far as they may be seconded to positions on the Gas Council, Area Boards, Consultative Committees, or other temporary or permanent sub-area management panels which may be set up for specific purposes.

Administrative buildings, offices, and equipment necessary for the carrying out of the companies' activities, already owned by the companies, will obviously have to be kept in use, at least until district integration or centralization proves to be possible and renders part or all of such offices, &c. redundant in any particular locality.

(b) MUNICIPAL UNDERTAKINGS.

The existing administrative machinery of most municipal undertakings is closely interlinked with the machinery of the local authority concerned. In the main it may be said that certain of the legal and financial officers of the local authority are, to varying degrees, partly responsible for the administration of the gas undertaking; especially is this so in their respective capacities as legal and financial advisers to the various committees dealing with the administration of the gas undertaking; to some extent the duties of these officers are parallel to those of the company secretary and treasurer (or accountant) respectively.

It is common practice for the financial officer to deal with some, or all, of the following work—loans; accounts, salaries and wages; pensions and allowances; superannuation; income tax; meter readings and collections and internal auditing.

Obviously much of this work could be carried out by the Area Boards (as from the vesting date) without assistance from local authority officers. Theoretically, the only relevant duty of the local authority after separation would be the application of the annual payments from the area boards in respect of outstanding loan debt charges; in practice, however, it is conceivable that a considerable time may elapse after the vesting date before local authorities are entirely relieved of work carried out on behalf of gas undertakings.

As in the case of gas companies it is likely that all officers of the municipal undertakings will be required to carry on after the vesting date until the Area Boards' integration or centralization plans can be formulated; later there will no doubt be some re-arrangement according to the grouping adopted under area level. Aldermen, bailies, and councillors on gas committees will, of course, be in a similar position to that of the displaced directors of gas companies; some of these gentlemen will no doubt be seconded to positions on the new Councils and/or Boards to be set up.

Administrative buildings and offices used by local authority gas undertakings invariably include property separately owned by the local authority and in many cases there is considerable overlapping in respect of common billing and collecting offices and equipment where gas, water, and electricity accounts are handled.

In this connexion some information was collected regarding the area of meter readers and collectors' offices, &c., required in relation to the magnitude of typical gas undertakings, and it would appear that the space involved should not present any serious difficulties in the case of individual undertakings or groups of undertakings where such premises are not already included among their assets.

Area Boards in certain instances might of course be obliged to carry on with existing arrangements until other arrangements could be satisfactorily made, especially in view of current difficulties in the way of providing new buildings and equipment, apart altogether from questions of cost. In this connexion future arrangements will largely depend upon local operating efficiency and costs to the Area Boards with existing machinery, set against estimated costs of operating separately from local authorities;

* Presented to the North of England Gas Managers' Association, Newcastle, May 1, 1948.

such comparisons will probably be worked out by the Area Boards whenever details of integration and centralization schemes are formulated.

It is almost certain that positive directions will be issued regarding a national policy for separation of administration from the local authorities, and Area Board decisions in connexion with provisional local arrangements will be largely swayed by economic factors involving the terms upon which local authorities are prepared to continue to carry out specific duties on behalf of the Area Boards. Naturally if local authority terms are reasonable at the outset there would not be such strong arguments in favour of quick and complete separation; taking the long view local authorities should have much to gain by avoiding the disturbances which would be brought about by any unnecessarily sudden cleavages from their long established administrative machinery.

So far as the Greenock sub-area is concerned, where three adjacent municipal undertakings (Greenock, Gourock, and Port-Glasgow) will no doubt be integrated as the nucleus of an administrative group, a preliminary investigation shows that by modifying existing buildings and offices sufficient existing space could be readily adapted to accommodate a suitable collecting and billing organization, and plans have been prepared with this object in view. The Greenock meter reading and collecting staff meantime operate from separately owned local authority premises handling gas and electricity meters for Greenock district and electricity for Gourock and Port-Glasgow, while the latter authorities operate separate gas meter reading and collecting staffs. As the B.E.A. will no doubt ultimately wish to operate with separate machinery a considerable reorganization of existing arrangements will be required and the training of additional personnel will require consideration.

(c) GENERAL.

Dealing next in a general way with local aspects of transfer it is apparent that the consolidation or reformation of existing groups of undertakings and the regional grouping of the remaining undertakings, irrespective of previous ownership, will be one of the first tasks of the Area Boards.

Geographical and technical considerations will, of course, enter largely into such deliberations but from the administrative angle it is interesting to consider briefly the possibilities of improvements and economies. Some 1,046 undertakings in Britain are to be divided into 12 areas, therefore each Area Board will require to arrange for the regional grouping of an average of 87 undertakings. Actually the numbers in each area vary rather widely—e.g., the Scottish Area embraces the largest number, viz.; 198 undertakings and the North Thames Area, including the extensive G. L. C. Area of supply, will be composed of the minimum number, viz.: 8 undertakings.

It must be remembered, of course, that so far as Scotland is concerned 70% of the total population is concentrated in mid-Scotland where integration of gas undertakings has already been carried out to some extent; in spite of the revolutionary integration which has taken place there remain in mid-Scotland approximately 100 individual undertakings, or about half of the total Scottish undertakings. Assuming that further integration entailed the formation of sub-groups, averaging 10 undertakings per group, it can be seen that there is considerable scope for further centralization here; outside of the mid-Scotland belt the possibilities of physical integration are more remote, but some seven or eight isolated groups suggest themselves for sub-group adminstrative treatment.

Taking the Scottish Area as an example of the possibilities of future integration and centralization it certainly appears that if only by creating sub-groups averaging 10 undertakings each, considerable economies in administration could ultimately be effected; and considerable changes in administrative duties of the existing chief gas officers will naturally follow.

Probable Administrative Changes at Sub-Area Levels

Some idea of the probable changes in administrative duties of chief gas officers can be obtained by listing the probable changes in policy following transfer as follows:—

(*a*) Chief gas officers will be directly responsible to Area Boards and not to local authorities and company directorates as previously.

(*b*) Officers in charge of sub-areas, although relieved of much responsibility in respect of national gas organizations' work and higher administration will have increased responsibilities in respect of sub-area administration, including centralization and reorganization work generally.

(*c*) Officers below sub-area level will have a varying degree of responsibility depending upon the extent of possible local centralization and integration; in general it is anticipated that much duplication of effort in respect of routine work will be cut out, especially where bulk supplies are made available, and more time devoted to specialized development, distribution extensions, improved service to the consumer, and the local supervision of technical and labour personnel directed from selected centres.

In order to facilitate study and discussion of the extent of the changes in higher administrative work likely to follow the establishment of the Area Boards a typical list of higher administrative responsibilities presently devolving upon a local chief gas officer is set out hereunder. Many chief gas officers at present devote considerable time to the honorary duties in the management of the various organizations listed, while also carrying out remunerative consulting work for other undertakings, and it remains to be seen how much of the time thus spent can be reallocated when the Area Boards and Gas Council assume control.

The following gives an indication of the administrative responsibilities of a gas engineer and manager additional to those attached to a local appointment.

THE BRITISH GAS COUNCIL

(1) Central Board, London.—Elected member.
(2) Executive Regional Committee.—Elected member and on several Sub-Committees.
(3) Domestic Development Committee, London.—Member.
(4) Regional Domestic Development Committee.—Chairman.

REGIONAL GAS DEVELOPMENT CENTRE

(5) Elected Chairman of Advisory Committee.

REGIONAL COKE ASSOCIATION

(6) Elected member of Central, Finance, and District Committees.

REGIONAL TAR DISTILLERS' CO-OPERATIVE SCHEME

(7) Member of the Producers' Management Committee, the Joint Management Board, and Finance Sub-Committee.

THE FEDERATION OF GAS EMPLOYERS

(8) Elected member of Regional Management Committee.

REGIONAL JOINT INDUSTRIAL COUNCIL

(9) Member of Council and Sub-Committee on Zoning and Grading.

REGIONAL GAS ENGINEERING ADVISORY BOARD

(10) Member of Board and District Section.

DISTRICT GAS ASSOCIATION COMMERCIAL SECTION

(11) Member.
Also representing employers on the following bodies:—
(*a*) The British Road Tar Association.
(*b*) The British Sulphate of Ammonia Federation.
(*c*) The National Benzole Association.
(*d*) The British Standards Institution.
Acting in professional capacity on the following Sub-Committees of the Institution of Gas Engineers.
(i) Gas Installations.
(ii) Gas Meters.
(iii) As a "corresponding" member of the Codes of Practice Drafting Panels.

National Aspects of Transfer

(a) PROFESSIONAL ASSOCIATIONS.

In so far as these organizations are financed by gas industry personnel, most of whom are likely to remain as officers after the vesting date, the transfer of gas undertaking ownership will not materially affect their activities; on the other hand it has been indicated that the question of fuel research policy is to be co-ordinated nationally by the Minister of Fuel and Power, in collaboration with a Scientific Advisory body to be set up for this purpose; therefore some modification of the Gas Research Board programme may be required.

The existing arrangement in connexion with the financing of gas research depends upon a certain apportionment of the British Gas Council funds obtained as part of the annual subscriptions from individual gas undertakings to cover in addition, of course, the national activities of the B.G.C., the I.G.E., together with the F.G.E. and the Joint Industrial Councils.

It is well known that the professional associations at present carry out a great deal of work in connexion with the provision of technical education and training schemes; in Scotland, as a matter of fact, most gas undertakings subscribe an extra 3d. per million cu.ft. of gas made as a further contribution toward the provision of suitable educational facilities at selected Scottish Centres of education.

There is authorization in the Gas Bill for the Area Boards to make provision for the training and education of employees subject to co-ordination by the new Gas Council. It is apparent, therefore, that the work of existing professional associations in respect of research, education, and training will be modified to some degree in future by the extent to which such subjects are pursued by the Area Boards.

The recently formed Gas Engineers' National Guild should take a prominent part in future negotiations relating to executive officers, at both national and area levels.

The position of District Associations, including their Commercial Sections, the Junior Gas Associations, and the Salesmen's Circles should not be affected to any extent; these associations will no doubt receive considerable encouragement from

the Area Boards in view of their importance in furthering technical knowledge and providing platforms for the dissemination and discussion of new ideas, and in the bringing forward of aspiring technical and scientific specialists and administrators.

(b) BRITISH GAS COUNCIL AND FEDERATION OF GAS EMPLOYERS.

Although it is anticipated that certain activities of these bodies will ultimately be directed by the new Gas Council and the Area Boards, much of the existing machinery would appear to be necessary to preserve satisfactory continuity and co-ordination of statistical and development work at present administered from, and largely carried out at, Gas Industry House.

The question naturally arises as to how far the existing B.G.C. headquarters and regional officers, staff and premises, can be profitably reorganized (a) to carry through the transitory period, and (b) to be merged into the new organizations of the Gas Council and Area Boards.

Perhaps the first essential is to ensure that the excellent negotiating machinery of the National and Regional Joint Councils is not unduly disturbed. On the employers' side the Federation will presumably ultimately comprise members of the Gas Council and Area Boards for meeting at national and regional levels respectively; possibly additional representation will be required in each area from gas administrators occupying positions below Area Board level, in order to cover minor local affairs as intimately and directly as possible.

It would appear that the financing of those essential national organizations will be a matter for each Area to handle direct with the constituent undertakings concerned and where necessary to make contributions towards any relevant expenditure incurred at Gas Council level, on a proportionate basis.

(c) DEVELOPMENT CENTRES.

The development and publicity work at present carried on by Watson House, the Domestic Development Committee, and the Industrial Gas Centres would appear to call for more detail commercial and technical work than could reasonably be handled without considerable delegation below area levels. Routine detail work in this connexion would therefore probably be best handled by the commercial and technical personnel at present actively engaged in these fields, the work being co-ordinated by the secretarial officers and staff at present thus employed by the committees and centres referred to, all under the direction of the Area Boards, the Gas Council and specially appointed executive officers as required; the necessary finances will no doubt ultimately be provided pro rata by every sub-area group of gas undertakings through the Area Boards and Gas Council.

(d) COKE ASSOCIATIONS.

The same principles would appear to apply in respect of the Coke Associations, since much day-to-day detail work must be carried out below area levels by practical and experienced personnel.

(e) TAR SCHEMES.

Dealing next with the distillation and marketing of tar and tar products from gas undertakings, it transpires that in most areas highly efficient organizations already exist whereby the bulk of the tar produced at individual undertakings is handled under long term agreements on a co-operative basis. The direction and control of the producers' side of these schemes will naturally devolve upon the Area Boards in so far as the latter will become the new proprietors of the gas undertakings. Under Area Board direction some further co-ordination of tar distillation and marketing may ultimately be achieved especially where distillers at present remain outside the existing co-operative schemes.

In special cases—e.g., where coke oven producers are concerned—where the coal board or the steel industry owners may require to be represented on the Joint Management Boards and Committees of co-operative tar schemes, and for the efficient management of these schemes generally it would appear that a certain amount of delegation or sub-area representation will be essential in order to continue their highly successful commercial operation in the best interests of the gas industry.

(f) OTHER ASSOCIATIONS.

Other associations such as the British Road Tar Association, the British Sulphate of Ammonia Federation, and the National Benzole Association, each has its own own functions to perform and will undoubtedly require continued support at least equal to that provided by the existing membership, however much the ultimate direction and control may devolve upon the Area Boards and the Gas Council together with the other subscribers concerned.

I had the honour to be President of the North British Association of Gas Managers in 1942, and in my presidential address in April of that year I mentioned the need for long range planning and listed eight principal specific objects associated with desirable future developments attainable only by close regional co-ordination as a first step towards national co-ordination of the industry: As the objects referred to are equally important to-day I take the liberty of repeating the relevant section of my 1942 address hereunder:—

"Assuming that the ranks of the gas industry are closed by 100% co-operation in the near future the decks would thus be cleared for action along the following lines:—

The regional co-ordination of town and coke oven gas undertakings to attain specific objects such as:—

(*a*) Conservation of coal by centralization of production where feasible.
(*b*) Closer co-operation with the coal industry.
(*c*) Increased production of suitable prepared solid fuel to replace coal presently burned raw.
(*d*) Improved efficiency in recovery of by-products.
(*e*) More economical direction of forward planning of all new works.
(*f*) Standardization of (1) pressures at which gas is distributed (2) quality of gas, (3) gas charges, (4) service policy, and (5) gas burning equipment.
(*g*) Conservation of man power by adopting mobile sections for work of an intermittent nature.
(*h*) Improved working conditions and conditions of employment."

At that time I considered that these specific objects might be attained by the gas industry without special legislation being necessary. Events have proved otherwise, and it now rests with us all, within the framework of the proposed new legislation, to extend and improve gas service to the public by facing our responsibilities with foresight and resolution.

COVENTRY'S LINK WITH NUNEATON

Important results are expected from the linking up of the Coventry Corporation Gas Department's supply with the distribution system of the Nuneaton Gas Company which was brought into operation on April 24. The Nuneaton Gas Company is closing down its manufacturing plant and will draw the whole of its supplies from Coventry.

Coventry's gas has a calorific value of 450 B.Th.U.; that made by the company was of only 200 B.Th.U.; and industrial and domestic consumers will be able to use many kinds of appliances and equipment which could not be operated on the old supply.

These factors are expected to lead to a considerable development in the use of gas in the area. Mr. J. E. Wakeford, Engineer and Manager of the Coventry Gas Department, said he would be be surprised if the Company's supply was not increased fourfold in a comparatively few years. If the present facilities and statutory charges were maintained and on the present basis of charge, he had worked it out that the Company would increase trading profit by £200 on every additional 1% of gas sent out.

Mr. B. H. Brigham (Chairman of the Nuneaton Gas Company) said they could not go back on the scheme but they were sure the Nuneaton people would get a good deal of benefit out of the changes made.

With Alderman J. Howat (Chairman), Councillor H. Stanley (Vice-Chairman), of the Coventry Gas Committee, a fellow Director, Mr. W. G. Parson, and the Engineers and Managers of the two undertakings, Mr. Wakeford (Coventry), and Mr. George Helps (Nuneaton), all of whom took part in the ceremony of opening the valves at the governor house on the Nuneaton boundary with Bedworth and at the Nuneaton works, Mr. Brigham expressed warm appreciation of the good relations and spirit of co-operation which had made the quick, smooth carrying through of the scheme possible. Others present at the ceremony were Mr. A. B. Britton and Mr. G. J. Rimmer, Engineer and Assistant Engineer of the Hinckley Gas Department, together with Mr. F. A. C. Pykett and Mr. W. Clark, District and Assistant Distribution Engineer, and Mr. A. W. Attwood, Constructional Engineer, all of the Coventry undertaking.

Present arrangements are for a maximum supply of 40,000 cu.ft. per hour, but the plant and the 10 in. main connecting Nuneaton with Coventry's high pressure ring main at Bedworth, three miles away, could deal with up to 100,000 cu.ft. per hour.

The Nuneaton scheme was the third of the three arranged a year ago for the absorption of part of the manufacturing capacity of Coventry surplus to the city's own post-war needs. The undertaking, one of the largest in the country, began bulk supplies to Rugby Gas Company in January and to Birmingham Corporation in February. In 1927, the city bought the Kenilworth gas undertaking and in 1930 that at Bedworth. Since then, it has supplied the whole of the needs of the two towns they served.

Biggleswade Urban District Council is making rapid progress with its new housing estate. Each of the first 50 Airey type houses is equipped with an Ascot instantaneous multipoint gas water heater, with special flue installation due to the concrete walls. Air brick slabs were used and the complete installation showed an estimated saving in plumbing costs of £15 per house compared with a solid fuel system.

BRITISH INDUSTRIES FAIR

THE twenty-seventh British Industries Fair opened on May 3 and will remain open until May 14, having sections at Olympia, Earls Court, and Birmingham. Castle Bromwich is, as usual, devoted to the heavy engineering trades and has 1,121 exhibitors occupying about 400,000 sq.ft. The main groups of exhibits there are divided into four sections: A, hardware, ironmongery, and brass foundry; B, building and heating; C, electrical equipment; D, engineering, metals, transport, and gas. In addition, there is an outdoor section devoted to agricultural equipment, road, quarry and contractors' plant, mining gear, and structural products. Every effort has been made to make the Fair attractive to overseas visitors and the facilities available are much improved. At Birmingham, for example, 14 interpreters are available speaking between them all European languages and certain Asiatic languages. An air taxi service between London and Birmingham is another interesting innovation. Catering facilities have also been improved, continuing the cafeteria principle introduced for the first time at Castle Bromwich last year, when 400,000 meals were served. In the following pages some of the Birmingham exhibits are briefly described, and while space limitations preclude the lengthy report once possible to the "JOURNAL," it is felt that these notes will be of assistance to readers visiting the Fair, and of interest to those unable to do so.

THE B.G.C. EXHIBIT

AS far as the gas industry is concerned the most important exhibit at the Fair is that sponsored by the British Gas Council. The pavilion on the stand has walls that are pleasantly fluted and finished in pastel shades; only the lettering is weak and not aggressive enough for a show of this nature. The main purpose of the stand, however, is to display industrial gas appliances, and few can quarrel with the choice made. Broadly speaking, the main exhibits illustrate four processes: Radiant heat drying by means of tunnels, file finishing, bolt heating, and die casting.

The infra-red tunnel manufactured by Parkinson & Cowan (Gas Meters), Ltd., consists of two 3 ft. sections of 2 ft. diameter tunnel, and incorporates a conveyor (Teleflex Products, Ltd.) which has been mounted directly on to the tunnel. This provides a completely self-contained installation which can easily be moved about should a change in production planning require it. The centre point of each radiating surface is fitted with a thermocouple connected to a multi-point temperature indicator contained in a suitable panel (Industrial Pyrometer Co.).

The industrial radiant unit manufactured by Bratt Colbran, Ltd., is rectangular with a flat front or radiating panel, and a number of the units can be built up into a plant of any desired cross section to suit the work to be processed, from flat sheets to large and bulky articles of any shape. Thus a plant can be constructed for work suspended from an overhead conveyor and hanging vertically, or passed through an oven on a horizontal belt, the work being processed by downward radiation. Alternatively, the units may be positioned to radiate heat from below. The performance of the units is such that they can be placed vertically or canted forward or backward up to an angle of 45 degrees. This Bratt Colbran unit has temperature measuring equipment by Electroflo Meters, Ltd. Samples of this drying panel have already been shipped to New Zealand, Portugal, and Belgium.

A display operated by William Turner & Son, Ltd., illustrates the finishing processes connected with a file. Here can be seen the various processes of hardening, quenching, cleaning, and scouring, the steam for the last-named operation being provided by a fully-automatic gas-fired steam boiler by the Brockhouse Heater Co., Ltd. An interesting point about this particular exhibit is that the bulk of the files processed here will be taken direct to the docks in boxes and shipped for export.

The gas-heated infra-red dryer is a Radiant Flame dryer of the batch type manufactured by the Clayton Equipment Co., Ltd. The lead bath is the Lo-press type manufactured by Brayshaw Furnaces & Tools, Ltd. There is also temperature-measuring and control equipment by Electroflo Meters, Ltd.

The gas-fired bolt-heating machine uses an ingenious principle devised by the Birmingham Gas Department, the method being based upon securing a high rate of heat-liberation from which is secured a stream of products of combustion at high temperature and high velocity.

The process used in the bolt-heating furnace on exhibition which is manufactured by the Incandescent Heat Co., Ltd., consists of heating the ends of lengths of round steel bar to forging temperature. These are then "headed" to the required shape in a bolt forging machine. The furnace proper is simple in construction, using a minimum of refractory material, and mounted on a strong base of mild steel welded construction. The power required is small, approximately one-quarter horse-power to drive the chain, and one horse-power maximum for the air fan. The exhibit also incorporates a temperature indicating pyrometer by the Foster Instrument Co., Ltd., and an Arkon flow recorder by Walker Crosweller & Co., Ltd.

In the important field of work covered by the die-casting industry, gas again proves itself the ideal fuel where very accurate temperature-control is essential.

The die-caster shown is made by E.M.B. Co., Ltd., and is designed for the high speed manufacture of finished castings up to 12 oz. in weight in high standard zinc alloy. The machine is operated by a single handle, and speeds up to 20 shots per minute can be obtained with normal labour. The furnace is gas-fired, adequately insulated to prevent excessive radiation, and will melt 208 lb. of metal per hour under working conditions, with automatic temperature control and indicating equipment (Ether, Ltd.). Particular attention has been paid to maintenance, the operating valves being mounted on the back of the machine and the gas control valves in a compartment underneath the furnace. The machine is so guarded that it cannot be operated unless the guard is closed. The top of the metal pot is also fitted with an insulated cover to prevent splashing and to conserve heat.

SOME OF THE TRADE EXHIBITS

Stand D235.—On an impressive stand, **A.C.E. Machinery, Ltd.,** present an interesting range of hoists and winches. Of particular note are the concrete elevating plant, the A.C.E. tower platform hoist, and a push-button-operated automatic discharge hoist. Other exhibits include a geared electric winch, a warehouse hoist, and a petrol-driven contractors' winch.

Stand A415.—Extremely novel in design, the stand of **Acme Wringers, Ltd.,** shows the Acme portable cleanser-wringer, which fits tub, table, sink, bath, or washing machine, off to fine advantage. A giant wringer at the rear of the stand is flanked by white-garbed life-size plaster figures through whose hands passes the spotless material from the wringer, forming a bright and unusual spectacle.

Stand D302.—Renowned for the manufacture of spray guns and similar equipment, the **Aerograph Co., Ltd.,** contributes an interesting selection of apparatus dominated by the DeVilbiss type MBC spray gun for large-scale finishing operations. Other items include artists' air brushes, pressure feed tanks, paint circulating systems, air transformers, air compressors and receivers, spray booths and exhaust fans, and portable air compressing plants.

Stand D505.—A very large selection of equipment is displayed by **William Allday & Co., Ltd.,** including fans, forges, furnaces, gas and oil burners, blowing and ventilating fans and equipment, industrial gas appliances, soldering stoves, high speed brazing apparatus, improved type electric soldering irons, and blacksmiths' and tinsmiths' tools. The most unusual feature is probably a new jig-saw machine which will cut out plastic, plywood, aluminium, cast iron, and mild steel, when fitted with different saw blades.

Stand C213.—An interesting range of protective finishes and lubricating materials is to be seen at the stand of **C. R. Averill, Ltd.** It is only possible to list their products briefly: Avarc silica-graphite paints for iron and steelwork protection, synthetic finishes, chemical resisting and heat resisting paints, Avarc graphite specialities, flake lubricating graphites, greases, jointing compounds, graphite, manganese and pleen.

Stand D407 and 306.—On a large island stand with an attractive domed pavilion constructed primarily of glass bricks, **Babcock & Wilcox, Ltd.,** exhibit everything for the boiler house. The equipment includes model boilers of all types, pulverized fuel firing equipment, stokers, chain grate stokers for shell boilers, heat exchangers, and pressure vessels.

Stand B320.—As the B.I.F. is intended primarily to promote overseas trade, **Benham & Sons, Ltd.,** have concentrated mainly upon electrically-operated cooking appliances. Nevertheless, there is a fine range of gas-, steam-, and oil-operated equipment as well. Outstanding among the gas exhibits are the solid top range, hot closet with bain marie, under-fired grill, and steamer. Aeromatic non-light back gas burners and injectors are demonstrated in connexion with the solid-top ranges.

Stand B702.—Industrial finishes and insulation are the speciality of **Bitulac, Ltd.** Presented in attractive fashion, the stand shows hard gloss and oil gloss paints, enamels and varnishes, Bitulac coloured anti-corrosive solutions, electrical and insulating

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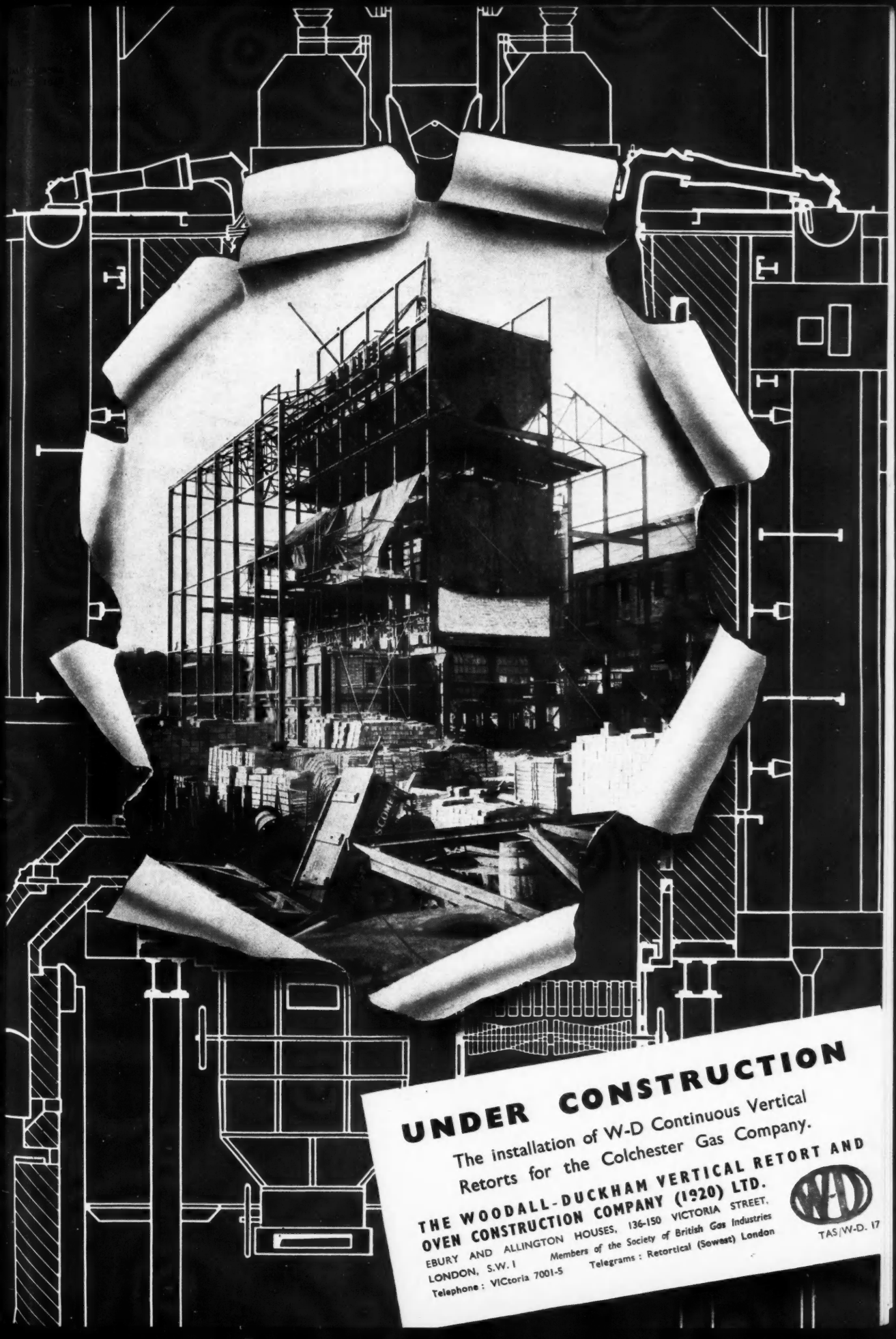

UNDER CONSTRUCTION

The installation of W-D Continuous Vertical Retorts for the Colchester Gas Company.

THE WOODALL-DUCKHAM VERTICAL RETORT AND OVEN CONSTRUCTION COMPANY (1920) LTD.

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W-D

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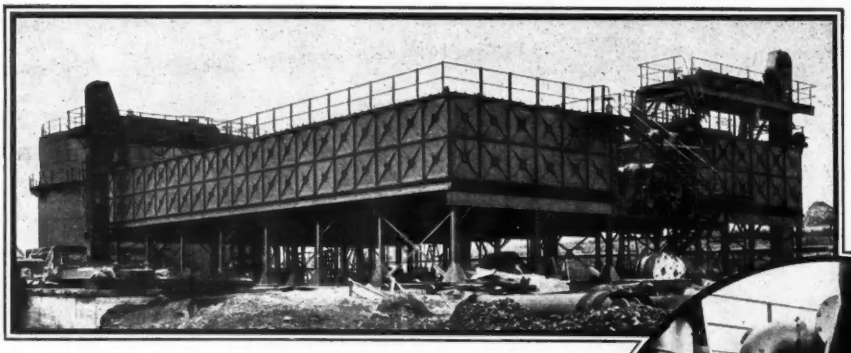
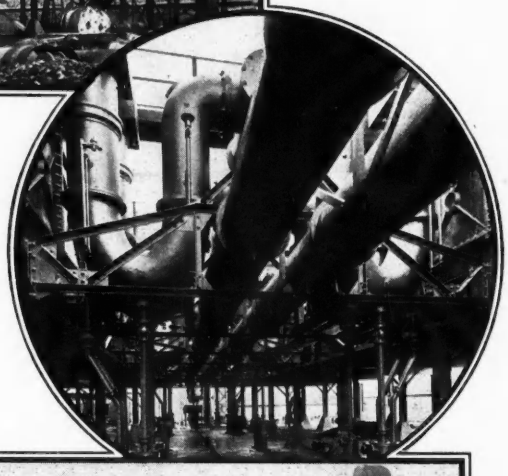
ELEVATED DEEP PURIFIERS

by Dempster of Elland



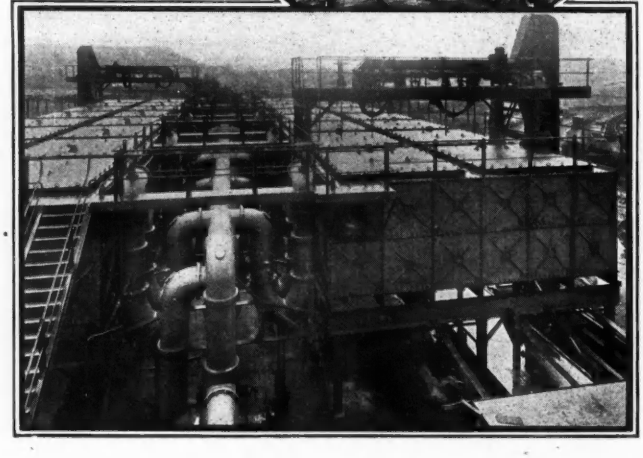


As specialists in Purifier design, we have given considerable attention to this type of installation, and have built many such sets.

We illustrate a contract comprising 8 Boxes, 30'0" × 30'0" × 10'0" deep on Steel Structure, with our Combined Travelling Oxide Plant and Cover Lifting Gear.

Top: General view. (In background, Gasholder also erected by us.)
Inset: Showing Connections.
Bottom: Overhead view.

These Purifiers designed for a gross capacity of 8,000,000 cu. ft. of gas per day.



ROBERT DEMPSTER & SONS LTD.

ROSE MOUNT IRON WORKS, ELLAND, YORKS.

London Office 57 TUFTON STREET, S.W. 1.

compounds, insulating varnishes, emulsified and plastic bitumen compounds for protection of heat and cold insulation.

Stand B611 and 510.—Renowned for their dumpers, **E. Boydell & Co., Ltd.,** exhibit models in three sizes for hauling bulk materials, plus instantaneous tip. All have a rotateable driving seat and steering gear, enabling the driver to face the direction of travel whether running in dumper or vehicle direction—an obvious advantage in a machine designed for use on long hauls and capable of running for long distances on the road.

Stand C419.—Specialists in non-atmospheric burners, **Geo. Bray & Co., Ltd.,** have staged a fascinating stand, featuring flat flame and cylindrical jet burners for domestic and industrial gas appliances, domestic incandescent and street lighting burners consuming coal gas and bottled gases, and acetylene lamp burners.

Stand D203 and 102.—The **British Vacuum Cleaner and Engineering Co., Ltd.,** exhibit on a brightly designed stand their range of pneumatic boiler flue dust removal plant, high velocity boiler ash sluicing plant, central vacuum cleaning installations, portable industrial vacuum cleaners, pneumatic conveying, heating, and ventilating, and pneumatic sack cleaning equipment.

Stand D405 and 304.—The **Brockhouse Heater Co., Ltd.,** feature the Watts and Selfstoke automatic gravity feed boilers for central heating and hot water services, and gas-fired and oil-fired steam boilers for small- and medium-sized steam installations. On the same stand may be seen products of **Orme Evans & Co., Ltd.,** including the Elgin calor cooker and a high speed kettle for quick boiling on gas jets.

Stand D622.—A wide variety of tools and devices for the fitter, plumber and engineer is exhibited by **Tom Carrington & Co., Ltd.** Among the many types of implement are taps, dies, die-stocks, tap-wrenches, ground thread taps, chaser die stocks, and pipe cutters. The stand itself is finished in a pleasant cream with green lettering.

Stand C604.—On a stand of great interest **Chance Bros., Ltd.,** show an excellent display of electrical and acetylene-operated marine lighting equipment, together with electrical switchgear and electric submersible pumps.

Stand D709.—"Mechanize Your Manpower for Export," is the slogan adopted by the **Chaseside Engineering Co., Ltd.** As examples of how this may be done, the exhibit features the Chaseside Hi-Speed dumper and the Chaseside mobile mechanical shovel; both machines show compactness and sturdy construction.

Stand 230.—Next to iron, copper is the most universally used metal. This fact is appreciated to the full after a perusal of the **Copper Development Association's** stand which consists of a decorative structure built up of polished copper sheet and polished nickel silver, brass and gilding metal strip. A technical information bureau and handsome display panels make an effective exhibit. The building exhibit shows the application of copper as a flashing material by means of a chimney apron and gutter back of a type devised by the Association's engineers; a display of copper pipes unearthed after many years of service underground in different parts of the country is particularly interesting.

Stand B516.—Pipeline fittings, boilers and radiators form the basis of the stand of **Crane, Ltd.** The boilers include the Whitehall No. 4, designed for centrally heating large buildings, and a range of open fire domestic boilers for hot water and central heating. Valves for every purpose, flanged and screw type pipe fittings, steam traps, unions, expansion joints, and gauges are among the smaller exhibits.

Stand B300.—A revolving showcase of impressive design is a prominent feature of the attractive exhibit of the **Crittall Kitchen Equipment Co., Ltd.,** exhibit. Kitchen cooking and service installations for all types of jobs are displayed.

Stand B524.—**Cuxson Gerrard & Co., Ltd.,** exhibit their wide range of First Aid apparatus, including ambulance room equipment, stretchers, surgical dressings, respirators, &c.

Stand C519 and 418.—A very wide range of gas-heated large-scale cooking equipment is shown to its best advantage by the **Davis Gas Stove Co., Ltd.** The display includes examples of ranges, hot cupboards, grills, ovens for roasting, steaming, and pastry making, fish fryers, and boilers, &c.

Stand D221.—Driving belts for many purposes are the speciality of **R. & J. Dick, Ltd.** Among the large number of types on display are Ruberix, Dixit and Dixadd, Vee ropes, including Dixel for high horse powers, and Dickrope moulded endless accessories for the textile trade.

Stand D519.—The General Rubber Goods Division of the **Dunlop Rubber Co., Ltd.,** exhibit five types of product. These include floor coverings, industrial hose, industrial belting, and mechanical rubber goods. Of particular interest is industrial vulcanite, which forms tank and pipe lining for acid plants, mouldings, machined parts, battery boxes, and screw stoppers.

Stand A503.—**Easiwork, Ltd.,** concentrated their stand upon the demonstration of their controlled steam pressure cooker which, it is claimed, makes possible a saving in fuel, money, time, and food value.

Stand C734.—Refrigerators and suction cleaners compete for interest on the fine stand of **Electrolux, Ltd.** The refrigerators shown are the models LK300 and LK550, operated by electricity, oil, or gas, and the cleaner is the new model Z30 which claims a number of refinements.

Stand D114.—Of great interest is the blue and silver stand shown by **Elliott Bros. (London), Ltd.,** which contains a fine display of indicating, testing, and recording instruments. One intriguing device is a portable CO_2 meter which can be used for boiler plant with the addition of a temperature scale, and used in conjunction with a combined sampling tube and thermocouple stem; it can also be utilized for the cold storage of meat and fruit.

Stand C700.—Another most impressive collection of instruments is offered by **Ether, Ltd.** These include Ether-Wheelco electronic controls and combustion safeguards, recording and indicating automatic temperature controllers, radiation pyrometers, optical pyrometers, molten metal pyrometers, surface contact pyrometers, solenoid and motor-operated valves, and thermocouples.

Stand B327 and 226.—A comprehensive range of builders' hardware is admirably displayed by **Evered & Co., Ltd.** The principal exhibits are gas fittings and governors, plumbers' brass foundry, and a range of Everite plastics.

Stand D513 and 410.—Chains and conveyor plants form the basis of the exhibit by the **Ewart Chainbelt Co., Ltd.** The firm is associated with Ley's Malleable Castings Co., Ltd., and Ley's famous Black Heart malleable iron chains are a strong point of the display. Also shown are elevator buckets, all types and sizes of chain sprockets, and many other kinds of apparatus.

Stand C617.—The **Expanded Metal Co., Ltd.,** in an interesting exhibit, feature unbreakable industrial and traction resistances, electric air heater units, and anodized expanded aluminium.

Stand D128.—Specializing in lifting appliances, **Felco Hoists, Ltd.** are showing an effective short-headroom light-weight triple gear pulley block. Other exhibits include overhead travelling hoists, pulling jacks, equalizing and adjuster wire rope slings for unbalanced loads.

Stand B322.—**Gittings & Hills, Ltd.,** are exhibiting a variety of articles coated with their various industrial finishes. These include Rockhard synthetic stoving enamels, Airdrying synthetic enamels, cellulose lacquers, and high temperature blacks.

Stand D110.—The recent improvements in industrial rubber products is effectively demonstrated on the stand of the **Goodyear Tyre & Rubber Co. (Great Britain), Ltd.** The range of exhibits includes rubber impregnated conveyor belting, transmission belting, endless cord belts, and industrial hose.

Stand B231.—**Grant & West, Ltd.,** present their variety of products attractively on this stand. The exhibits include belt and wire-rope dressings, Selek jointing, Plastiloy gland packing, Cretex waterproofing, black varnish, furnace cement, wood block setting emulsion, tinning compound, aluminium solders, and rust solvent; there are also a number of tools such as pipe vices, spanners, wrenches, and jacks.

Stand B329.—Foremost on the stand of **G. A. Harvey & Co. (London), Ltd.,** is an interesting device for the petroleum industry comprising two end conical sections of a vessel used for separating gas and oil at the well head. These separators are the largest to be fabricated in this country; the finished product will be 150 ft. long × 4 ft. 6 in. diameter, weighing 210 tons. Other exhibits include angle and flat bar rings, rolled cold and flash butt welded, Harco perforated metals and woven wire cloth, Tapergil gilled tube, and an attractive range of radiator covers, pipe guards, and ventilating panels.

Stand B613 and 512.—One of the most unusual exhibits in the Fair is that of **Hills Patent Glazing Co., Ltd.,** which demonstrates their range of steel components for school and light industrial construction by means of a full-sized section of a modern school. Consisting of a glass-walled kiosk with stairs running to the roof of a classroom, this stand shows to perfection many of the Company's specialities.

Stand C606.—Looking very smart is the white stand whose green lettering proclaims it to be an exhibit by the **Horstmann Gear Co., Ltd.** The range of instruments shown include gas controllers for controlling street lighting, gas-fired central heating boilers, &c., Comet ignition devices, gas pistols, electric time switches for street lighting, cookers, and industrial and domestic purposes.

Stand C327.—**G. L. Howarth & Co., Ltd.,** display their range of washing boilers and washing machines in very attractive fashion. These gas-heated appliances are dominated by the Howarth Rapid washing machine which combines sturdy construction with a pleasing appearance.

Stand C723.—Specialists in the manufacture of ovens for industrial purposes, **Silas Hyde, Ltd.,** show an impressive range of gas-, electric-, steam-, and oil-heated enamelling, lacquering, core-drying, and other industrial process low temperature ovens.

Also shown are machine tool guards, and repetition and general sheet metal work.

Stand D409 and 308.—On a superb stand with a superstructure of aluminium and other metals, the Metals Division of **Imperial Chemical Industries, Ltd.** shows some of the most recent types of copper-nickel-brass alloy, which have a very high degree of resistance to both corrosion and erosion, and are recommended for non-water pipelines where unalloyed copper tubes are prone to these forms of attack. Also exhibited is an Alumbro (aluminium brass) tube suitable for various forms of heat exchangers for oil equipment and similar application, which retains its strength even at temperatures in the region of 400°C. An accelerated corrosion and erosion testing apparatus is another interesting exhibit.

Stand C725 and 624.—On this stand the **Incandescent Heat Co., Ltd.**, exhibit furnaces and equipment for all processes, complete mechanized rolling mill equipment, continuous gas carburizing, bright annealing, enamelling plant, charging machines, and complete foundry equipment. On *Stand B309 and 208* are shown metallurgical furnaces and equipment for all processes, fired by solid fuel, gas, oil, and electricity. As stated, *Stand C619 and 518* have a display of a gas-fired automatic bolt heating machine arranged for speed heating with concentrated combustion burners.

Stand D331 and 228, D241.—Two interesting models are a feature of the **International Combustion, Ltd.**, stand, one of a pulverized fuel-fired radiant boiler employing tangential firing, and the other of a Beaumont drag scraper plant for coal storage. Also shown are a Hummer electric screen, Vacseal pump, Raymond laboratory mill, and a Rovac laboratory filter. On *Stand A327 and 326* is a model of a tangentially fired pulverized fuel steam generator for a central power station, incorporating an adjustable furnace by means of tilting burners and other special features. The stand, which has diagonally-built superstructure, is white with attractive red lettering.

Stand D404.—Although **Geo. W. King, Ltd.**, exhibit examples of their sliding door gear and cowhouse equipment, the spotlight is centred primarily upon a wide range of mechanical handling equipment comprising electric pulley blocks, runways, the Safelec busbar system for track electrification, hand pulley blocks and overhead crane and conveyor components. The stand is pleasantly finished in pale green and red.

Stand B714.—An interesting presentation of copper pipe fittings by **James H. Lamont & Co., Ltd.**, occupies this stand. The high-spot is the Securex solderless compression joint which only needs a special expanding tool and a spanner to operate and can be performed in two minutes.

Stand B525.—Industrial finishes under actual accelerated exposure tests are a feature of the stand of **Donald Macpherson & Co., Ltd.**, where the test fountain operates continuously. Among the exhibits are some attractive balanced colour schemes in the latest Foochow finishes for the decoration of offices, showrooms, canteens, engine rooms, &c. One of the latest products is a synthetic enamel that is dust free in one hour and bone dry in four hours; it is also immune to oil, water, and impact.

Stand B300.—**The Magnetic Valve Co., Ltd.**, exhibits on an attractive stand a range of magnetic valves for the automatic control of water, steam, oil, petroleum, gas, air, and various refrigerants.

Stand D714.—Drafting machines, adjustable stands, mathematical scales, and light fittings are to be seen at the stand of the **Mavitta Drafting Machines, Ltd.** The drafting machines are made of steel tube with adjustable ball-bearings and the main angles are located automatically, intermediate angles by lock. The scales have inlaid celluloid edges and are divided to order on two edges.

Stand C324.—A handsome range of canteen equipment is well displayed by **Maxol Heaters, Ltd.** The Maxol café set is a particularly well-designed appliance with independently heated side vessels, thermostatically controlled. Dual control is fitted to enable the gas and boiling water tap to be turned on in one action.

Stand D305 and 204.—The range of crucibles and foundry equipment manufactured by the **Morgan Crucible Co., Ltd.**, and on view on their stand is a range too large to describe in these columns. However, of considerable interest is the range of Morganite carbon valves and slides used extensively by gas meter manufacturers. These valves supply their own lubrication, imparting a film of carbon to the metal counterface, thereby protecting it from chemical attack. Other advantages are their negligible inertia and the fact that Morganite carbon is non-hygroscopic.

Stand D247 and 144.—Specialists in electric arc welding, **Murex, Ltd.**, have a very fine display of welding equipment on their stand. Included is the safety device for a.c. welding equipment recently described in the "GAS JOURNAL" and some interesting equipment designed for use on oilfields. Dual purpose screens and helmets, perspex covers, and a wide range of electrodes complete the exhibit.

Stand C519 and 418.—In the foreground of the cream stand of **Radiation, Ltd.**, are two cafeteria service counters, one with hot and cold sections and the other made entirely for cold service. In addition to the usual range of New World large cooking equipment, there is an impressive newcomer in the shape of the Kingfisher fryer, a fine thermostatically controlled appliance with some interesting features.

Stand C703.—The range of boring and fixing devices manufactured by the **Rawlplug Co., Ltd.**, is a very wide one, but this year's exhibit features several new items. Among these is the H type toggle which is a heavy duty device for use where it is necessary to have a reinforcing brace at the inaccessible rear of a wall. Hand, mechanical, electrical, and pneumatic methods of boring are demonstrated on such materials as weathered concrete, glazed tiles, &c.

Stand C235.—An excellent working infra-red process plant is the main feature of the stand of the **Ray-Heeting Co., Ltd.**, who are manufacturers of tunnels, spray booths, conveyors, metal pre-treatment plant, &c.

Stand C519 and 418.—An exceptionally attractive stand is that of the **Richmonds Gas Stove Co., Ltd.**, which offers a wide range of gas-heated large-scale cooking equipment. Included are ranges, hot cupboards, grills, ovens for roasting, steaming, and pastry making, fish fryers, and boilers.

Stand A327 and 226.—**R. Russell & Sons, Ltd.**, utilize their stand to display the Dainty gas cooker; this 1948 model is of cast iron construction, vitreous enamelled, with a griller and three boiling burners.

Stand B414.—On a neat stand **T. E. Salter, Ltd.**, exhibit their range of Volex air heaters and fans for building, heating, and industrial drying processes.

Stand D127.—To show clearly the functioning of their valve, in which the mechanism is isolated from pipeline contents, the **Saunders Valve Co., Ltd.**, is exhibiting a large cut-open model. Elsewhere on the stand a 1-in. valve demonstrates the sure closure that is made by the flexible diaphragm and, on a 2-in. water pipeline, a whole battery of various types are to be seen in operation. Closely coupled with the valve exhibit is the display of Safran centrifugal pumps. One of these is a 1½/2 in. self-contained electric drive model with a 2 h.p. motor running at 2,900 r.p.m., and is shown pumping water around the grouped valve display in the centre of the stand.

Stand D407 and 306.—**Spencer-Bonecourt, Ltd.**, have staged an excellent exhibit of boiler house equipment, including several unusual features.

Stand B717 and 626.—The **Stanton Ironworks Co., Ltd.**, have two stands, the indoor island site mentioned above, and an outdoor stand in Section B, which displays their concrete products. The indoor stand is finished in gold and shows three types of flexible joints, including the well-known screwed-gland joint, which is demonstrated under pressure.

Stand B517 and 416.—Also specialists in pig-iron, and cast iron pipes (sand spun, metal spun, and vertically cast), the **Staveley Coal & Iron Co., Ltd.**, has produced a convincing exhibit, which gives prominence to the demonstration of pipe vibration; the pipe joint in question is deflected 8 deg. from normal without ill effect.

Stand D313.—**John G. Stein & Co., Ltd.**, is associated with the increasing use of chrome-magnesite bricks in the superstructure and uptakes of basic open hearth furnaces. This stand contains a selection of these bricks, in addition to firebricks, silica bricks, sillimanite and high alumina refractories, cements and patches, and glass tank blocks.

Stand D511 and 408.—At this stand is located the pleasant reception pavilion of glass brick construction of **Stewarts & Lloyds, Ltd.** At *Stand B404* in the Building Group is a selection of gunmetal valves and fittings for steam, water, and gas, gunmetal radiator valves, pipe fittings screwed for iron and copper, &c. The main exhibit, however, is an outdoor one, Stand D, which takes the form of a building of tubular steel construction, 81 ft. wide by 40 ft. deep. In this are exhibited steel tubes and fittings for the conveyance of steam, gas, air, water, oil, and sewage, coal mining equipment, foundry and basic pigirons, &c.

Stand C727 and 626.—In the midst of the fine display of large-scale catering equipment exhibited by **James Stott & Co., Ltd.**, are two outstanding items. One is the Derby boiler which, as was recently described in the "GAS JOURNAL," was designed for use in railway rest rooms. It combines the virtues of the constant flow type and the reserve type of water boiler, and an important point is that once the boiler is heated up, it operates on 2.5 cu.ft. of gas per hour and need never be turned off, assuring a supply of boiling water for 24 hours, seven days week service. The other exceptional exhibit is a fine vapour-heated hot cupboard, 11 ft. long, with a heated service counter.

Stand C604.—Submersible pumps are the particular interest of **Sumo Pumps, Ltd., and Austinlite, Ltd.**, who show pumps suitable

(*concluded on p. 281*).

PROPOSED COMPENSATION TO LOCAL AUTHORITIES

A Local Authority Gas Engineer and Manager's Memorandum

A MEMORANDUM prepared anonymously by the engineer and manager of a municipal gas department, setting out the case in brief for fair compensation to municipally owned gas undertakings, has been submitted to the members of the Standing Committee of the House of Commons now considering the Gas Bill. The author believes that with a few exceptions local authorities resent the Government's attitude to the subject of compensation, and as few, including the Association of Municipal Corporations, appear to have any interest he suggests that the British Gas Council should be asked to convene a meeting of local authority gas undertaking representatives to support a fight against the compensation terms defined in Clauses 27 and 28 of the Gas Bill.

The arguments in favour of confining compensation to payment of outstanding debt are, says the author, based mainly on two hypotheses, (i) nationalization is merely a transfer from one public body to another, and (ii) the consumers of gas have already paid for their respective local authority undertakings except for money borrowed and not repaid. On the first argument, everyone employed by or associated with a local authority could bring testimony to bear against nationalization simply reducing itself to a transfer. The business and industrial prosperity of many towns has been built up largely through efficient local authority departments one of the most important of which is the gas undertaking. This has been brought about by an efficient service and a cheap and ample supply of gas; in other words, by local administration and local pride.

Real Ownership

An examination of the terms of Clause 27 reveals the Government to be ignorant of the real facts of local authority gas undertakings or unwilling to face up squarely to the issue. Legally the local authority is the owner of its gas undertaking; in the Act transferring by purchase the gas undertaking of the Blank Gas Company to the Blank Corporation in which the writer is interested appear these wordings "... . the said Corporation should purchase and acquire the undertaking of the Company ....", and later "... . and whereas the owners and ratepayers of the said Borough ...." Then comes Clause 7 "... . there shall be transferred to and vested in the Corporation of Blank all such works, lands, buildings ....", and regarding the deeds of transfer "... . the execution and delivery of such deeds shall be conclusive evidence of the transfer of the undertaking of the Company to the Corporation ...."

Could any words be more explicit in regard to ownership? It appears to the writer that the Government can show no evidence where the undertaking whose Act has been quoted does not legally belong to the Borough of Blank. Therefore the proposed compensation in the Gas Bill is due to faulty understanding on the part of the Government and if pressed amounts to confiscation. It must be borne in mind that should the Bill fail to be an Act then provided there are willing buyers any Corporation Gas Department could be sold at a fair market price. This statement raises the importance of practice during the integration period prior to 1939. As an example the case can be taken of a local authority gas undertaking purchased by a holding company, the transaction resulting in a net amount being made available to the Corporation of say £30,000 (after repaying interest and sinking fund charges). Suppose that the purchase price was £70,000 and was put on to the market in 70,000 £1 shares; this, of course, is approximately what happened. In the Bill the value of that company will be approximately £70,000, whereas a neighbouring local authority undertaking worth £150,000 of anybody's money will go to the Area Board for the mere outstanding debt of £40,000.

Most local authority gas undertakings have at some time made contributions to rates, a clear indication that the ratepayer regards the gas undertaking as town property. It is a fact also that ratepayers have been represented by a committee for many years and have definitely been told "this gas undertaking belongs to the town." Latterly, however, the practice of contributing to rates has fallen by the way, due in a large measure to fuel competition, but there are instances where local authority gas undertakings have by reason of rate fund contribution incurred serious debts, which Area Boards are required to liquidate. Why accept liabilities and not pay for money earning assets?

The Government should take the trouble to find out the truth about municipal gas undertakings whose total net value will be in the region of some £80 million. When the present Government came to power a spokesman made it quite clear that compensation would be fair to nationalized industries. Instead the Government are taking, to quote the Minister of Fuel and Power, "the easiest, simplest and fairest method of compensation." Certainly very easy and very simple, but hardly fair if in his remarks he includes local authority gas undertakings.

Neither the Lord President in Second Reading Debate nor the Minister showed cause why fair compensation based on value should not be paid. The valuation of the local authority gas undertakings could be assessed in bulk by competent people in a matter of a few weeks and allocations to individual undertakings could be based on a simple formula devised from the annual accounts and the output of gas. This is the method that should be used, for the acquisition of property by dishonest means will have repercussions on the Government, who will be branded as robbers, which they were called during the first day's debate on Second Reading. In his summing up, the Lord President overlooked facts and it is not true that "profits were made only out of consumers of the commodity in which they dealt"; this is taken to mean that the Blank Gas Undertaking made all its profits from the consumers in Blank area of supply. If this interpretation is correct, then the Lord President, with all due respect, is wrong, having entirely overlooked many important items.

Fair Profits

It is true that domestic gas consumption has provided profits, but they have been fair profits derived from hard work in competition all these years with other fuels; only latterly due to extremely different economic conditions have gas prices in general become high and unpleasant.

Regarding the argument that the consumers have already paid for their undertakings profits have been obtained from industry and commerce in the open market for fuel to the extent of about 30% of the whole of the gas sold.

For some years past by-products have yielded up to 35% of the total income (according to the price of gas). This practically wholly from industry outside the undertaking's area of supply, also in the open market for fuels and chemicals. For instance, practically all the money from by-products in the Lancashire and Cheshire area has been made by a co-operative effort in which the tar and chemicals were sold on the open market.

By careful and judicious handling local authorities have not only been able to pay their way, but repay their loans and pay income tax. The acceptance of income tax by successive governments is an admission of trading profit, and where trading profit has occurred there is a material value to the trading concern. Contributions have been made to the local rate fund, quite legal as long as the charge for gas was no higher than a defined rate. The acceptance of this by successive governments in local authority Acts of Parliament is an admission that the Blank Gas Undertaking has a right to use its undertaking in the way it thinks best.

Sadly and unfortunately the Heyworth Committee made no effort to find out the principles and practices adopted in building up local authority undertakings, and the Government have followed blindly the Committee's lead. The fact in this case is that not one single local authority undertaking in this country has passed into other hands without payment.

Coke Oven Gas

Where undertakings have not manufactured gas, coke oven gas has been purchased. The fact here, of course, is that coke ovens have made profits out of the consumers of the commodity gas. Have the Government got an answer to this? A coke oven plant belonging to a colliery, which may be supplying gas for domestic purposes, is to be suitably compensated under the Coal Nationalization Bill, but not so the local authority gas undertaking retailing the coke oven gas. Then there are cases of independent coke ovens which have been producing metallurgical coke and in many instances selling gas to a statutory gas undertaking. These concerns are to be bought out at valuation by the National Coal Board.

In the author's opinion the only major defect in the gas industry was dual ownership. This is to be put right by nationalization and it would appear to be the only answer to the problem. The author is not opposed to nationalization. The whole object of his notes is to put the point of view of a municipal provincial gas engineer, who still has concern for the welfare of his undertaking and wishes to remain loyal.

Reference was Made in the "JOURNAL" of April 21 (page 149) to the Mark II rate of flow recorder and indicator developed by the Metronic Instrument Co., Ltd. There was an obvious printer's error in the statement that the Mark IIS model was available for the measurement of fractional differentials with ranges "as low as 0-0*m* w.g." This should have read "as low as 0-0.2 in. w.g."

INDUSTRIAL INFRA-RED HEATING BY GAS*

By A. C. F. Macadam, M.I.H.V.E., Technical Consultant, Matthew Hall & Co., Ltd.

THE application of radiant heating, with gas as the source of heat, for high speed industrial drying, curing, and conditioning is well established; and it is the author's intention to deal here with this particular application as applied to industry, and without going too deeply into the technical and scientific research that has been carried out to determine suitable wavelengths, temperatures, and drying times for various purposes.

Heat is transmitted and absorbed in two ways—*i.e.*, by radiation and convection. Convected heat is absorbed by the air passing over the radiating surface, and thence transmitted to the object to be heated until it attains the same temperature as the air. With convection oven drying, this temperature rarely exceeds 400° F., in practice, and therefore the application is limited. Radiant heat (infra-red) is emitted from the radiating surface in the form of heat rays, which pass through the air without materially raising its temperature and are absorbed by objects in their direct path. It is important to keep air circulation through the plant to the minimum required for the extraction of waste gases and volatiles, and so prevent heat being extracted from the radiants by convection, and thereby reduce the radiant effect with consequent loss of efficiency.

It is imperative that the object to be dried or conditioned is not shielded in any way from the direct path of the heat rays, and that the rays impinge evenly over the entire surface to be treated.

Radiant heating technique depends more on direct experiment with the particular object to be treated, as every class of material has a particular heat absorbtivity. Static tests are usually made in a test tunnel to determine suitable drying times and temperatures. From these tests can be determined length of tunnel or number of panels required and conveyor speeds to suit production methods. Owing to the high speed of the drying, precise timing and temperature control are necessary, and with gas-fired emitters this can be regulated by the simple operation of a gas tap.

It is essential that the stock be of uniform thickness and weight, particularly where moisture extraction or curing is required. In mixed batch drying, with articles of different thicknesses and weights, uneven drying would result and a combination of forced convection and radiant heating would be preferable, at slower rates of drying and at lower temperatures than those usually employed in black emitter radiation.

In the drying and curing of ceramics before glazing and firing, small objects such as insulators, teacups, plates, and thin articles can be dried without warping and cracking. It is concluded from experiments to date that 1 in. to 1¼ in. is the maximum thickness of any clay shape that can be dried economically without cracking by radiant heat. With articles of a greater thickness than this, convection oven drying, by forced hot air with controlled humidity, at lower drying temperatures and longer drying times, is necessary to prevent case hardening and to extract the moisture evenly from inside to prevent bursting or cracking.

From tests carried out by the Gas Light and Coke Company at Watson House, for example, porcelain textile thread guides have been successfully dried by infra-red without case hardening or cracking in 10-15 min. with a radiant panel temperature of 400°-450° F.; and trolley wire insulators up to 1¼ in. thickness in 2 hours; against convection oven drying in each case of about 24 hours.

One of the first applications of infra-red drying was for the stoving of paints on metals, and since that time the process has been applied to a great variety of articles. Table 1 gives some of the successful drying processes carried out by infra-red, and the saving of time over previous drying methods. These figures were collected by, and are published by the courtesy of, the British Gas Council, with some additions by the author.

Most industrial drying processes come within the black emitter range of temperatures and wavelengths from 400°-650° F. (4.8μ to 6.0μ), and the bright emitter range from 1,100°-1,800° F. (2.2 μto 3.6μ).* Table 2 gives the black body emission at these temperature ranges.

TABLE 1.

PAINT CURING AND METAL FINISHING BY INFRA-RED HEATING.

Comparative Drying Times.

Article	Previous method drying time	Infra-red drying time
Agricultural machinery...	60 min.	6 min.
Bedstead frames...	600 „	8 „
Cigarette cases	45 „	4 „
Clothes pegs	60 „	2 „
Cycle frames	45 „	7 „
Electrical iron cases	30 „	3 „
Folding chairs	90 „	3-5 „
Fluorescent lighting shades	40 „	3 „
Gas and electric fire surrounds ...	30 „	5 „
Gramophone parts	60-75 „	5½ „
Instruments (scientific)...	90 „	8 „
Kegs and drums	12 hrs. (air dry)	4 „
Kettles	45 min.	3 „
Kitchen and bathroom cabinets ...	24 hr.	12-15 „
Meat pans	45 min.	7 „
Office filing cabinets	45 „	4 „
Petrol pump cases	45 „	6 „
Petrol pump base castings	60 „	10 „
Pushcarts...	45 „	5 „
Refrigerator castings	1½-2 hr.	7 „
Shoe horns and shoe trees	60 min.	2 „
Spectacle frames	60 „	2 „
Sections for pre-fab houses (steel) ...	60 „	4 „
Sewing machine castings	60 „	4 „
Towel rails	90 „	7-12 „
Trays	60 „	2 „
Transformer cases	45 „	4 „
Trolleys (metal)...	45 „	4 „
Tubular furniture	45 „	6 „
Water-heater cases	40 „	4 „
Wire (loose-leaf ledgers)	35 „	¾ „

Article	Previous method drying time	Infra-red drying time
Infra-red Heating Processes other than Metal Finishing:		
Compressed paper pulp carriers ...	30 min.	11 min.
Bank notes	4 days (air dry)	40 „
Dipped earthenware glaze drying ...	40 min.	4 „
Earthenware trolley wire insulators ...	24 hr.	2 hr.
Earthenware textile thread guides ...	24 „	10-15 min.
Lacquer coating on cedar wood pencils	30 sec.	9 sec.
Latex goods	2 days	20 min.
Mint lozengers	4 „	40 „

* Paper to the Institution of Engineers-in-Charge, Feb. 11, 1948.

TABLE 2.

BLACK EMITTER RANGE. Black body temp. ° F.	Radiant heat emission B.Th.U./sq.ft./hr.	BRIGHT EMITTER RANGE. Black body temp. ° F.	Radiant heat emission B.Th.U./sq.ft./hr.
400	945	1,100	10,238
425	1,060	1,150	11,611
450	1,185	1,200	13,127
475	1,321	1,250	14,782
500	1,468	1,300	16,588
525	1,627	1,350	18,566
550	1,798	1,400	20,693
575	1,983	1,450	23,009
600	2,182	1,500	25,516
625	2,395	1,550	28,211
650	2,624	1,600	31,136
		1,650	34,271
		1,700	37,638
		1,750	41,246
		1,800	45,108

* 1 Mu = 10,000 Angstrom Units = 1/25,000 in. = 1 Micron.

It must be borne in mind that the temperature of the article being dried does not attain the panel temperature on completion of drying, and in the case of moisture extraction cannot exceed 212° F. until all the moisture is extracted, when drying is completed.

No emitter is as efficient as a black body. The usual factor of emissivity of a gas fired tunnel or flat panel is taken at 0.9 of black body emission as given in Table 2. The net heating efficiency —*i.e.*, in work performed—owing to the heat removed from the radiants in the form of convection in proportion to the volume and speed of the ambient air over same, heat removed in the burnt gases, and radiation from the outer surface of the tunnel or panels is usually taken at about 50%-55% of the total calorific value of the gas consumed, which is quite satisfactory in operating costs and is more economical than any other form of heat source.

In the black emitter range, the standard types of dryers are the tunnel type and the flat panel type.

The Tunnel Dryer

The tunnel type is constructed of sheet metal and is of cylindrical form in two semi-cylindrical segments joined together; each segment fired by non-bunsen type burners into an enclosed space between an inner radiating surface and an outer casing. The radiating panel is protected over the burner at the bottom, by a baffle plate, and the firing space is graduated in shape to ensure even heat distribution over the whole of the radiating panel. The outer casing is protected by heavy insulation to prevent loss of heat and to ensure that the maxmium heat is transmitted from the radiating panel. The temperature of the radiants is regulated by the simple operation of a gas tap for controlling the pressure of the gas to the burners. The tunnel is made in standard diameters of 2 ft., 3 ft., and 4 ft., in 3 ft. sections, and any length of tunnel can be built to suit temperatures and drying times to synchronize with the speed of the conveyor.

The gas equipment includes a governor on the gas main to plant for maintaining constant pressure at the burners; and each half

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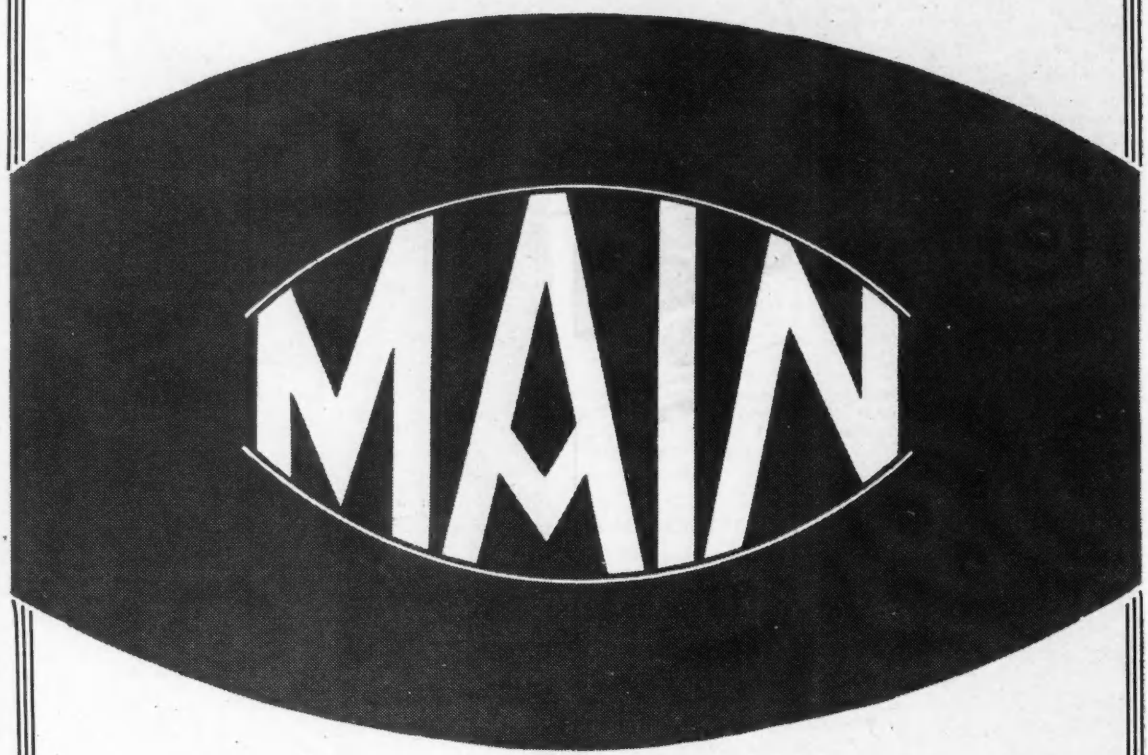

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of the tunnel is separately fired and fitted with "U" gauge, graduated in tenths of an inch water gauge up to 2 in. w.g., to give panel temperatures up to 700° F., this being the maximum pressure required for normal use. Thus the intensity of radiation is proportional to the pressure shown on the gauge; and the radiativity of the panels is regulated by the operation of the gas tap.

Table 3 gives some operating details of the three sizes of the G.L.C. black emitter heat tunnels at present in use.

TABLE 3.

Tunnel diameter	2 ft.	3 ft.		4 ft.
Industrial jet size	No. 2	No. 2	No. 3	No. 5
Operating pressure in. w.g.	1	1½	1	2
Gas rate: Therms per hr. per 3 ft. unit	0.65-0.72	0.78-0.85	0.78-0.85	1.52-1.60

The gas rates shown are in all cases sufficient to produce a panel temperature of 650° F. in 40 to 50 min., and to maintain this temperature. Higher initial rates will give shorter heating-up times, but it is then necessary to turn down the gas to maintain a panel temperature of 650° F. when this figure has been reached. It is essential that the gas main serving the plant is of sufficient size and capacity, and that the gas pressures on the inlet side of the governor is not less than the operating pressures given above.

The Flat Panel Unit

The flat panel black emitter unit is made up in small box-like formation, and is suitable for irregular shapes, or of such a size as to be unsuitable for the tunnel type. They can be built up to form any contour or angle, such as vertical flat sides for prefabricated steel house sections, steel furniture, and suchlike large and irregular shapes.

One type of panel covered by British Patent No. 454,328 has several new features incorporated, making for greater efficiency, among which are the following:—

Tapered combustion chamber ensuring correct distribution of heat and correct velocity of flue gases.

Flue outlets on face of emitter panel, thus maintaining high ambient temperature in working space.

Even emissivity over whole face of the radiant, thus eliminating uneven heating as with the straight type of combustion chamber, and cast iron panels.

Swaged mild steel construction makes for rigidity and allows the fitting of thermocouples and distance recorders.

The units are fitted with a high efficiency insulation, to prevent absorption of heat by the panel casings.

To guard against failure of gas ignition, and to indicate any panels shut down, each panel is fitted with a heat detector (British Patent Application 27436/47) operated by the flue gases of the actual panel to which it is fitted. Being insensitive to temperatures below 400° F., they are unaffected by radiation from any other panel or by convection currents, and cannot therefore give a false reading. Moreover, within 15 sec. of the gas being extinguished, the detector shows that the combustion has ceased at that particular panel.

The panels are made in two sizes—viz., 3 ft. by 1 ft. 6 in. and 2 ft. by 1 ft. The larger panel with a radiating surface of 4.5 sq. ft. consumes only 52 cu. ft. (0.25 therms) of gas per hour, at a calorific value of 500 B.Th.U. per cu. ft., giving a radiant temperature of 650° F.

If a hood is fixed over the tunnel or panel assembly to remove the fumes and convected heat, with fan extract, care should be taken not to create too great a velocity of air through the plant, and so remove heat by convection. Care should also be taken that the plant is not sited between open doorways or in a direct line with plenum or fresh air inlets to room for the above reasons.

Temperature Recording

The standard equipment for temperature recording consists of thermocouples attached to the inner surface of the radiating panel of each half section of the tunnel or to each panel, for the recording and control of a multi-point distance recorder, and any section can be regulated by the operation of the gas tap; thus any temperature variation within the limiting temperatures of the plant can be made to suit the process in hand, or a constant heat maintained over the whole. The temperature recorder must be adequately insulated, or fixed at a sufficient distance from the plant, to guard against any radiation and to give a true reading of the temperature difference between the radiants and the ambient temperature.

The chief use of high intensity panels within the scope of this paper is for annealing and ceramic firing. They are usually of two types—the muffle furnace type with luminous refractory chamber, and the other with exposed flames and luminous refractory backing.

With the bright emitter panels or muffle furnaces at temperatures of from 1,100° to 1,800° F., fired by low pressure gas, it is necessary to boost the gas pressure and air supply by blast fan from about 6 in. to 12 in. w.g. with air and gas mixing device.

Among the various types of luminous refractories used are the following:—

One type of directly heated conveyor furnace consists of a row of non-bunsen type burners firing into a space bounded on one side by insulating refractory brick and on the other side by radiant bars. In effect the heating zone is between two gas fires facing one another, with the conveyor system passing through the bottom of the tunnel. In another example of a typical muffle furnace, the hot gases are confined between insulating refractory bricks and a shell of heat resisting cast iron or steel constituting the wall of the muffle. The principle is the same as for the black emitter tunnel, except that the panel temperatures of the muffle would be from about 932°-1,832° F. as desired. As with the direct heated type, conveyor system runs through the base of the tunnel. These two types were designed by the Gas Light and Coke Company.

Yet another type of porous block radiant burner (Docking patents) is built of scientifically graded granules built into self-contained casing, around which the gas/air passes on its way to the surface of the luminant, where it burns entirely without flame. This radiant gives temperatures up to 850° (1,562° F.).

An interesting type of burner has been developed by Keith Blackman, Ltd., in conjunction with the South Metropolitan Gas Company. It consists of a heat resisting metal disc heated to a temperature of about 1,650° F. by a small high pressure gas burner working at a pressure of 3 lb. per sq. in., and the products of combustion are evacuated through a central hole.

The outstanding difference between high temperature electric sources and gas fired medium temperature black emitters is the wavelength of the infra-red rays developed. The wave-band of the former is from 7,700 A.U. to 40,000 A.U. with a peak at 12,000 A.U.; while the gas panel emitter extends from 20,000 A.U. to 150,000 A.U., with an extended peak between 40,000 to 60,000 A.U. The practical significance of these longer wavelengths in paint stoving is that they are not selectively absorbed by paints of different colours, and it is possible to dry all colours from black to white for all practical purposes in the same time, within narrow limits. Bright polished surfaces such as polished aluminium or chromium plating have low emissivity and high reflectivity and require longer heating-up periods, but when painted the stoving time is within narrow limits the same as for painting on mild steel at normal paint temperatures of 200°-300° F.

With a peak panel intensity of 50,000 A.U., corresponding to a temperature of about 650° F., the flux density falling on the stock in a tunnel is about 4,000 B.Th.U./sq. ft./hr.

Heat transfer increases very rapidly with increasing temperature, and with a bright emitter source of heat, flux densities of 50,000 B.Th.U./sq. ft./hr. are obtainable, approximately 100 watts per sq. in. (1 watt per sq. in. = 491 B.Th.U./sq. ft.). This figure may be compared with 10 watts/sq. in., which is the maximum obtainable at present in electric lamp systems, by irradiating both sides of the object simultaneously.

Drying Ceramics

The term "drying" or curing before firing applied to the pottery industry usually means lowering the moisture content of the wet clay from about 22% to 8%, and, as before mentioned, thin shapes have been successfully treated; but on tests carried out on clay dumps, about 2 ft. in diameter and 20 lb. in weight, the moisture content was reduced in about 10 hours, with a radiant panel temperature of 300° F., without cracking. This low temperature is difficult to maintain in a gas-fired tunnel, and a combination of radiation and hot air convection would be preferable, the process being the first stage of raising of temperature with high humidity to prevent case hardening, then a further prolonged stage with controlled humidity and rising temperature, finally lowering of temperature and humidity to complete the drying. This involves a 24-hour cycle.

Polyvinyl chloride (P.V.C.) is being used in many cases as a rubber substitute. This material is rolled or spread on fabrics, and when heated under a panel at a temperature of 600°-650° F. for a minute or two the necessary volatile is evaporated, leaving a glazed surface which on cooling is the finished "cured" product. The material is waterproof and creaseless and can be used for ground sheets, curtains, bags of all types, and furnishings. All colours can be made, and any thickness of sheet from oiled silk to tarpaulins.

In the manufacture of cloths and printed fabrics, the cloth, after bleaching and other processing, may contain up to 90% by weight of water, which it is necessary to reduce to about 5%. Most of the existing drying plants are forced hot air heated to about 240° F., and owing to output the plant is necessarily large and expensive.

To increase present output by 50% would mean drying material up to 54 in. in width in about 30 sec., and it should not be difficult to accomplish this by radiant heating, either as a drying agent to reduce the water content to 10% or as a complete dryer. Experimental work now proceeding suggests that either black emitter panels at 600° F. or flash heating by high temperature

TABLE 4.

PERFORMANCE OF BLACK EMITTER RADIANT HEATING TUNNELS.

No.	Material or process	Type of tunnel	Approx. panel temp. °F.	Conveyor Spacing	Conveyor Speed ft. per min.	Process time min.	Production No. per hr.	Approx. consumption therms/hr.	Cost per object at 10d. a therm
1	Painting oil drums, 0.024 in. × 17 in. × 11 in....	9 ft. × 2 ft. diam.	550	Not yet installed		1.5	120	1.8	0.15d.
2	Painting mild steel petrol tanks 7 ft. × 1 ft. 6 in. diam., 50 lb. weight	15 ft. × 3 ft. diam.	550-450 graduated	8 ft.	1.5	10.0	6	2.75	4.6d.
3	Painting sheet metal pressings 22 g. × 9 in. × 7 in.	9 ft. × 3 ft. diam.	500	12½ in. in pairs	2.0	3.0	400	2.0	0.05d.
4	Painting dust pans (domestic)...	9 ft. × 2 ft. diam.	500	12 in.	3.0	3.0	153	1.5	0.10d.
5	Painting 20 g. sheet iron stands pre-fab. house plumbing equipment 3 ft. 10 in. × 12 in. × 7 in.	6 ft. × 4 ft. diam.	550	2 ft.	2.0	3.0	60	4.0	0.66d.
6	Painting mild steel tubing 20 g. × ½ in. diam.	6 ft. × 3 ft. diam.	500	4 in. variable loading	0.5	12.0	525	1.25	0.02d.
7	Painting miscellaneous articles, including metal tops 6 ft. × 2 ft. and cabinets 3 ft. × 1 ft. 6 in. × 1 ft. 6 in.	9 ft. × 4 ft. diam. and 3 ft. extension. Each end unheated.	500	Variable	3.0	3.0	60-75	5.5	0.8d.
8	Painting folding metal chairs ⅛ in. × ⅛ in. bar and seat 22 g. × 1 ft. 3 in. × 1 ft. 3 in. ...	9 ft. × 3 ft. diam.	420	No conveyor		6.0	90	1.6	0.18d.
9	Painting chairs as 8, mixed with reflectors for strip lighting...	9 ft. × 3 ft. diam.	380	No conveyor		6.0-7.0	40 chairs, 32 reflectors	1.5	0.21d.

panels in the range of 500°-903° C. (950°-1,650° F.) will successfully speed-up the drying process.

In polymerizing crease-resistant materials, impregnated in the cloth, the fabric is dry on entry and has to be heated to 300°-350° F. As with moisture evaporation from the cloth, the present processing is limited to steam heated dryers, and it is hoped to reduce the processing time by increasing the temperature by means of radiant heating. In designing radiant heating equipment careful consideration should be given to the risk of damage to the cloth if the machine should stop, and the use of individual panels has the advantage of cooling rapidly in case of breakdown.

In the high temperature range, the chief use has been for ceramic firing and annealing.

One G.L.C. designed unit is used for fusing a red printing ink into the white glaze of sparking plug bodies. The high radiant intensity (about 50,000 B.Th.U./sq. ft.) enables temperatures up to 700° C. (1,292° F.) to be obtained. This equipment has also been used for annealing glass cells which require to be raised from 500° C. to 650° C. and then slowly cooled to 50° C.

Among some processes which may be mentioned are:—

The toughening of glass instrument cover panels by heating to 500° C. and then quenching in air.

Softening of aluminium bottle caps after manufacture. The caps are raised to 350° C. and held at that temperature for about 2 min. in a muffle conveyor furnace designed to deal with 250,000 caps per eight-hour day. With muffle walls at 600° C. and 30 capsules on each block, a four-minute cycle gives the above results. Other uses to which high temperature radiant heating can be applied are for the shrink fitting of metal components and the firing of gold and silver glaze on ceramics and glass.

Most solids (other than transparent bodies) are opaque to infra-red radiation, and in processes involving moisture extraction, such as clay shapes, soap, sweets, and similar bodies, high temperature gradients are produced in the material, and hardening of the outside surface, leading to bursting and cracking. The removal of moisture can only be obtained by keeping the surface in a moist condition during extraction, and drying-off at lower temperatures and flux dentities than those obtained in the conventional tunnel or panel. In drying moulding powders only thin layers of about ¼ in. can be treated by high temperature, and thicker layers require other heating methods.

The heating of the interior of all opaque solids is accomplished by conduction, and persistent heating by radiation at a high flux density will spoil the surface and fail to heat the interior.

Infra-red is playing an important part in industry in reducing the bottleneck usually occurring in the drying process, resulting in a great saving of time, space occupied by plant, and economy in running costs.

The author has given a few examples showing the diversity of products successfully treated and much experimental data has been accumulated. Certain practical performance figures have been collected and are given in Table 4. The figures are given without comment, because no comparison can be made with former data of results by other methods.

DISCUSSION

The **Chairman** (Mr. R. F. Hayman, Gas Light and Coke Company), remarking that he had had a good deal to do with the problem of radiant heating in industrial processes, said there was nothing new in this method of heating nor was there anything magical about it. It was introduced largely as a result of the need for substantially increased production during the war, but it was not a universal panacea. Indeed, it had suffered, like many other new things, in that in the first flush of enthusiasm it was put to all sorts of uses, but it was now known what radiant heating could and could not do. One of the key things in increasing production was the removal of bottlenecks, and all too often in factory drying there was a bottleneck either in the production line or by virtue of the fact that exceptional storage space was required for the articles produced which otherwise could be used for production purposes. Radiant heating played a very important part in reducing the bottleneck caused by drying. At the same time there was little advantage in applying radiant heating to reduce this bottleneck unless the saving in the time taken for drying was substantial. For instance, experience had shown it was not possible to dry large clay shapes by radiant heating and, as the author had pointed out, convection oven drying, by forced hot air with controlled humidity, at lower drying temperatures and longer drying times, was necessary to prevent case hardening and to extract the moisture from the inside to prevent bursting or cracking. But radiant heating was a powerful force at high temperatures.

Mr. **J. B. Carne** (South Metropolitan Gas Company) said that although the author had mentioned the advantages of radiant heating by gas and electricity, he himself, being a gas man, was convinced there were many advantages in the use of gas, and one was that the heat was utilized very much more efficiently. Thus the over-all effectiveness for the same amount of money was far higher with gas than electricity. He had been concerned with considerable experimenting with radiant heat tunnels during the past six years, and a great deal of similar work had been carried out in the various laboratories in the gas industry. As a result, it had been found that in order to get the most effective results it was necessary to have a high air temperature in the tunnel and that the radiant heaters should give not only a high degree of radiation but also a high degree of convection—which, as a matter of fact, was usually obtained. The gas industry had been using panel and tunnel dryers for six or seven years and hundreds of them were distributed throughout the country, while many had been sent abroad from this country. The advantage of the gas tunnel over the electricity tunnel dryer was that it gave something of the order of 40% or 50% radiation and up to 40% or 50% of convection, and the high air temperature ensured uniform drying of the articles. Up to the present, radiation had been mainly relied upon and differences due to the construction and geometric configuration of the articles going through were accentuated in the results due to the fact that there was a low air temperature.

Drying of Vitreous Enamel

One thing that puzzled him was the reference by the author to the use of radiant heating for annealing aluminium capules. As the Chairman had pointed out, radiant heating was not the final solution of all problems and certain difficulties had been encountered, in his experience, in the application of radiant heating to aluminium. In his own case it had been proved, to his satisfaction, that this could be done much more satisfactorily by convection.

In connexion with panel dryers of the unit type, of which he had had a fair amount of experience, an interesting application was the drying of vitreous enamel. This was done far more satisfactorily than with convection because the operation was practically independent of weather conditions, whereas with convection drying, winter conditions, high humidity, &c., considerably altered the rate of drying; apart from the fact that what took minutes with radiant heating took some hours with convection. The versatility of the panel dryers was very marked because the panels could be arranged in all sorts of integrations from walls 20 ft. high in which large sheets of metal could be dried in a

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The title " No Loss " is derived from the type of liquid that is used as the indicator, and this liquid, covered by patent, is the most important feature of the gauge.

With the growing demand for more accurate control of Gas Plant, sometimes under severe conditions, measuring apparatus, particularly pressure gauges, capable of meeting the requirements has been repeatedly asked for.

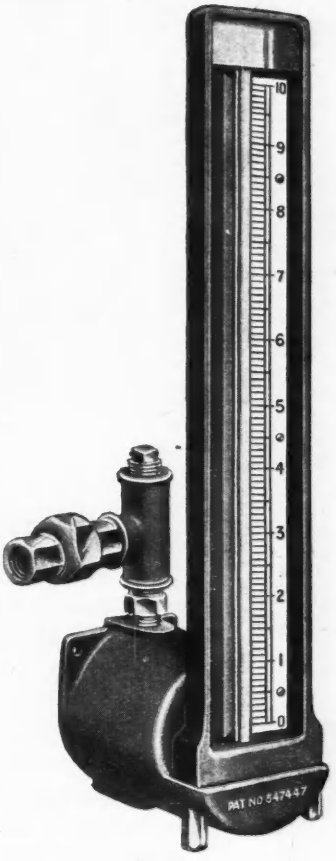
There are many places such as the retort house and exposed plant of a gas-works, or the gas-fired furnaces employed on the thousand and one uses to which gas has proved so adaptable, or the gas-fired ovens used in the confectionery trade where the extremes of temperature give rise to difficulties when using liquid pressure gauges or manometers.

The water column gauge in its two main forms, single column and double column, has proved to be most simple and efficient in use, except for the fact that in warm surroundings, it is necessary to keep a constant check on water level to recover the loss in level due to evaporation, and in cold weather, exposed gauges will freeze up. A gauge which overcomes these difficulties has now been produced by using a special liquid and scale.

This liquid will not evaporate at temperatures well above the boiling point of water neither does it freeze at temperatures below the freezing point of water, it does not absorb or deteriorate when in contact with gas and it is not chemically active on metal or glass. Its density is slightly heavier than water hence the use of a special scale.

The construction of the gauge is simple yet robust and of pleasing lines, whether standing on its base or fastened to a wall or board. Being a single column gauge it is easy to read.

In addition to the pressure reading scale, space is provided for the addition of another scale calibrated to indicate per cent. of full flow. This means that if the full flow pressure is known, then a scale can be supplied that will indicate with reasonable accuracy whether the gas control is set at ¼ or ½ or any opening between shut and full.



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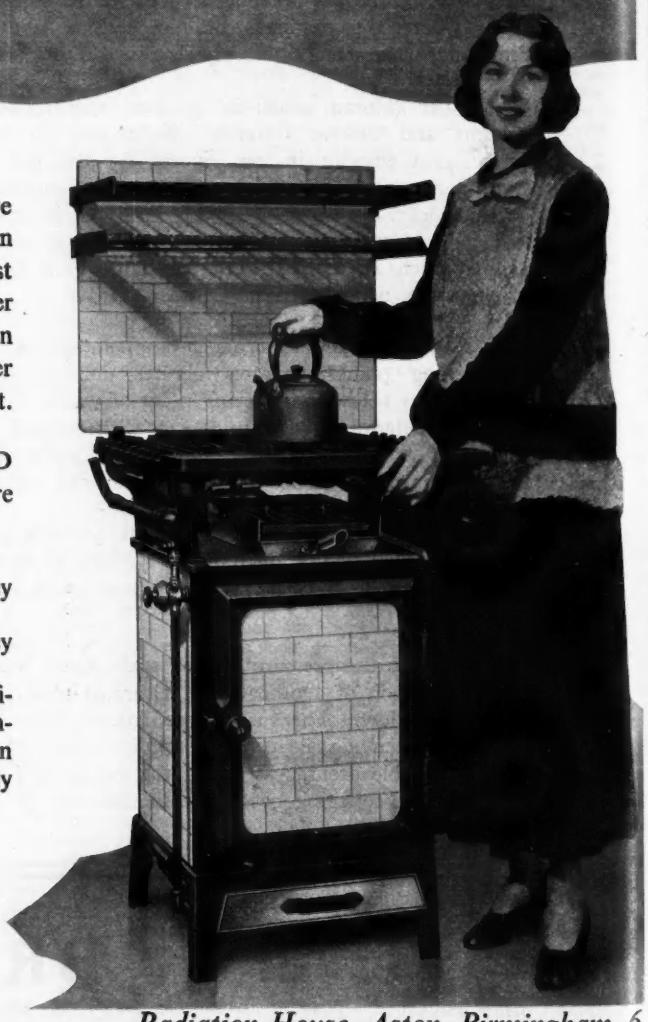

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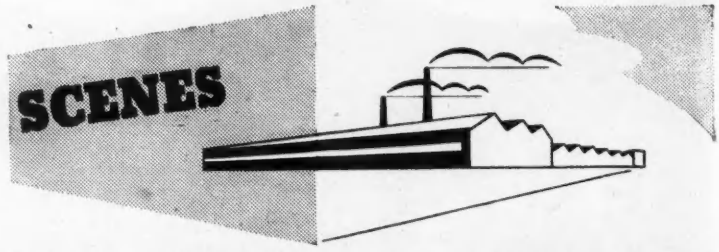

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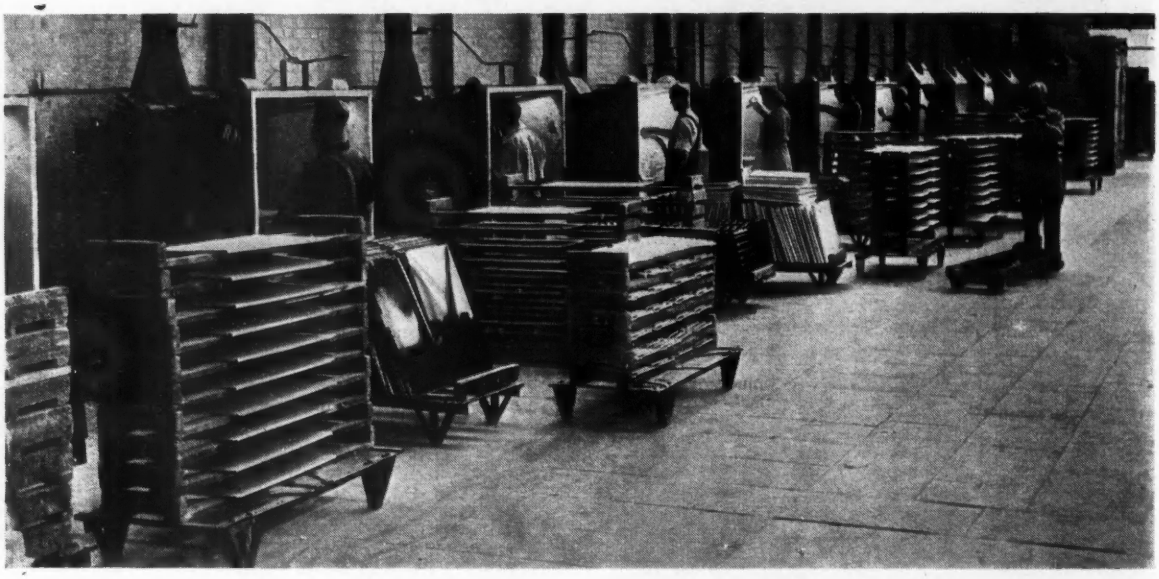

Applying Liquid Enamel

One of the most interesting processes in the manufacture of gas appliances is the covering of metal surfaces with vitreous enamel. • After the various parts have been thoroughly cleaned by sand-blasting or acid treatment, they are ready for their first coat of enamel. Usually the first coat is applied by dipping, and is known as the "grip-coat"; for it acts as a bond between the metal and subsequent coats of enamel. Application of the final coat is done by means of spray-guns in specially illuminated spray-booths as here illustrated. Spraying enamel on the metal parts calls for considerable skill. In order to ensure a perfect surface, the parts must be covered evenly and to a prescribed thickness —this requires nice judgment in handling the spray-gun. • Slow and careful drying is the next operation after the parts have received their final coat, and this is done in a thermostatically controlled drying oven. Drying takes about 30 minutes at a temperature of 150° F.

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matter of 4 min. With air drying, owing to the humidity of the atmosphere, these sheets would be standing about the shop for some 12 to 18 hours. With radiant heating they were dried in a few minutes and could be placed in store straight away. That type of job was one of the first done in 1941 with panel dryers. In that case the firm in question had a very large throughput of food packs which had to be coated with anti-rust lacquer for the tropics and a bottle-neck was caused owing to the fact that by air drying they took four to five hours. With radiant heat drying the time was only a matter of minutes and the congestion previously experienced in the chain of production was immediately eliminated. He did not think we had reached the limit of applications of radiant heat drying, and the developments that were taking place would be well worthy of the effort.

Reducing Weight of Dryer

Remarking that he had not seen the new panel dryer which the author had described, he asked what was the weight of the unit. In the design of the unit his Company had produced, he said they were aiming at an adaptable and easily managed one, and it was hoped to get the weight down to about 15 lb. At present the weight was about 25 lb.

Another point about radiant heating was the perfect control of the transfer of heat. The heat left the radiator straight on to the article, whereas with convection heating it was more or less a matter of luck where the heat went. Sometimes it tended to by-pass the article. Generally speaking, with radiant heating something like 80% of the heat that left the radiator was absorbed by the article, and it was not possible to rely on anything like that with convection.

Mr. **Macadam** thanked Mr. Carne for amplifying what had been said in the paper. On the question of annealing aluminium capsules, he said he would like to refer that to the Chairman, who had made extensive experiments in this connexion. The weight of the panel drying unit described in the paper was about 20 lb.

Mr. **Hayman** said the point made by Mr. Carne as to keeping a high air temperature was very important indeed. When an article was put in a radiant heat tunnel, it immediately began to heat up by radiation from the side. It also immediately began to lose heat by convection to the air of the tunnel, if the temperature was below room temperature, or even if it were higher than room temperature. The aim must be to keep the air temperature at the equilibrium temperature it was desired the object should obtain, and then there would be no loss by convection at all. The point was that the higher the air temperature up to the equilibrium, the shorter the drying time.

Continuing, he said he must defend his aluminium capsule tunnel, for which he was largely responsible. To anneal aluminium required a temperature of 350° C., which was a high temperature for hot air, and this temperature was obtained in about one minute. Any articles shielded from radiant heat were heated by convection and this was an example where theoretical considerations did not come in. With regard to frit drying, the H.M.V. gas iron was enamelled and the frit was dried by radiation, and it had stepped-up production enormously. The enamel must be dried before it was fired, and it was ready for firing in a very much shorter time when dried by radiant heat.

Drying in the Printing Trade

Mr. **Brand** asked if the author had had any experience of drying printing. He believed there had been some experiments in that direction but understood that there was a hardening effect, but that later on there was a softening effect.

Mr. **Macadam** replied that he had had some experience of drying banknotes, but at first, with a very high temperature, the notes were destroyed. Eventually a reasonable temperature was arrived at and drying was successfully achieved without any alteration to the texture of the paper or the colour of the ink. That was a difficult job because moisture was evaporated from the paper and from the drying of the ink, two entirely different characteristics, but the drying was carried out quite successfully in 40 min. The result was quite satisfactory both from the printing and chemist's point of view. However, to get that on to the production line was quite another story.

Mr. **Brand** said he was thinking of die-stamping.

Mr. **Hayman** said that was not dissimilar to the problem of drying newspapers, and here was what was known as the "flash" drying operation. The best way was to pass the paper through a flame, and that was a line along which work was being done at the present time. With newspapers coming off the line at very high speed it was necessary to adopt rather drastic methods, and he believed eventually this flash operation would become widely adopted. The experimental work was fairly tricky.

Mr. **Ward** said that a number of printing houses in London had used radiant heating for drying for a considerable period.

Mr. **Webber** asked why there was a preference for the luminous burner for radiant heating over the bunsen burner. Some years ago he had some electric motor field coils which had to be dried. They gave a very low megger test reading before drying and on being put into a rather crude tunnel with luminous flame burners they took a long time. Then bunsen burners were used and the megger test immediately showed an improvement. Moreover, he should have thought the type of burner generally used, which was of the geyser type, would be difficult to manipulate because of carbon formation on the surfaces where the flame impinged.

Mr. **Hayman** said the implication of the last speaker's remarks was that the heat output from a luminous burner was less than from the bunsen type of burner, but the fact was that for a given gas rate or thermal throughput, it did not matter what the flame was, the heat output was precisely the same. He agreed that if the flat flame or, as he preferred to call it, an injectorless burner flame was allowed to impinge on a cold surface, carbon was deposited, but care was taken in the design of the tunnel to prevent that. With the injectorless type of burner there was better control and there was no risk of lighting back. If, however, it was desired to concentrate the flame on a small spot then it was necessary to use an aerated or bunsen flame.

In answer to a question with regard to the drying of cloth and clothes by radiant heat, Mr. Hayman said there would be no reduction of drying time in the case of a wet overcoat, but the drying of printed textiles was another matter. Indeed, this was a big potential field and was being worked upon at the present time.

Mr. **E. A. K. Patrick** (Gas Light and Coke Company) explained in a little more detail the reasons why it is necessary to have as high an air temperature as possible with radiant heating. He said that in plants of this type there was always air at a lower temperature than the final temperature of the object being heated, and therefore that air was a cooling agent. A point to be borne in mind was that the cooling of a body by convection was not a simple function of the temperature. It depended on the shape of the article. For instance, a highly curved object lost heat more rapidly by convection than did a plain object. The work must be of the same thickness if satisfactory results were to be obtained, but even that was not, in itself, a sufficient condition, because in the case of a 22-gauge wire attached to a 22-gauge plate, the wire would gain heat rapidly by radiation but lose it more rapidly by convection and there was the danger that the wire would be underheated compared with the plate. Examples of this were handles of dustbins or handles of milk churns, which might not reach the same temperature as the remainder of the article.

It had been stated by the author that a body might be transparent to infra-red rays, but that most solids (other than transparent bodies) were opaque to infra-red radiation. It should, however, be borne in mind that transparency to infra-red radiation was not necessarily the same as transparency to visible radiation. Things which were transparent to radiation in the visible region of wavelength were not necessarily transparent to infra-red radiation, and vice versa. An instance of that was Perspex, which was transparent in the visible region of the spectrum but was not transparent to low temperature infra-red radiation.

BRITISH INDUSTRIES FAIR (*continued from p. 270*).

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Extracts from the review appearing in "GAS JOURNAL," April 21, 1948

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GAS STOCKS AND SHARES

While there were public rejoicings in celebration of the Royal Silver Wedding, stock markets opened the week very quietly and the general tone became dull. Uneasiness over the "once for all" investment levy, combined with the week-end's poor savings figures, had a depressing effect on British funds, though there was a considerable improvement later in the week. A new three weeks' account covering the Whitsun holiday period opened on Wednesday, and while prices generally were firmer, without much change, there was very little increase in the volume of business in industrial shares. The week's total dealings on the London Stock Exchange, and the general level of British funds and industrial securities remained practically unchanged.

In the gas stock market, however, there was again a substantial increase in the volume of business, the number of bargains recorded being 531, compared with 262 in the corresponding week six months ago. Results of the Montevideo Gas and Dry Dock Company for 1947 were reflected in a drop of 13 points, and other British-owned overseas undertakings showing a loss on the week were Imperial Continental, two points down, and Primitiva Holdings, which finished the week 6d. lower at 13s.

The week's rises and falls were as follows :

OFFICIAL LIST

Brighton, &c., 5 p.c. std. cons.	...	102	—107	+ 1
Derby, cons. ord	...	133	—138	+ 1
Gas Light & Coke, ord.	...	22/9	— 23/9	— 3d.
Imperial Continental, cap.	...	122	—127	— 2
Montevideo, Ltd., ord.	...	118	—123	— 13
Portsmouth & Gosport, cons.	...	145	—150	+ 1
Primitiva Holdings Ltd., ord.	..	12/	— 14/	— 6d.
South Metropolitan, ord.	..	97½	—100½	— ½

Quotations on the London Stock Exchange

When last ex-Dividend	Dividends Interest.% Last Yr.	Prev. Yr.	NAME.	Quotations April 29
Feb. 25	4	4	Alliance & Dublin Cons. Ord.	21/9—22/9
Apr. 28	5	5	Asscd. Gas & Water U'd'tgs Ord.	21/ —23/ xd
	6	6	Do. Deferred	22/ —24/ xd
Mar. 10	4½	4½	Do. 4½ p.c. Red. Cum. Pref....	19/ —21/
"	4	4	Do. 4 p.c. Red. Cum. Pref. ...	18/6—20/6
"	4	4	Do. 4 p.c. Irred. Cum. Pref....	17/6—19/6
Feb. 11	7	7	Barnet Ord. 7 p.c. max.	153—158
Feb 25	5	5	Bath Cons. Ord .5 p.c. basic ...	103—108
Sept. 17	6½	10	Bombay, Ltd., Stock	46/- -49/-
Mar. 10	8½	8½	Bournemouth Std. 5 p.c. sliding scale ...	163—168
"	7	7	Do. 7 p.c. max. div.	153—158
"	4	4	Do. 4 p.c. Pref.	96—101
"	6	6	Do. 6 p.c. Pref.	123—128
Feb. 11	3½	3½	Do. 3½ p.c. Red. Deb. ...	97—102
Dec 10	4	4	Do. Perp. 4 p.c. Deb. ...	98—103
Feb. 25	5·35	5·35	Brighton, &c., 5 p.c. Std. Cons. ...	102—107
"	6·3	6·3	Do. 6 p.c. Std. Cons.	108—113
Dec. 10	5	5	Do. 5 p.c. Perp. Deb.	117—122
Feb. 25	5	5	Bristol, Gen. Cap. 5 p.c. max. ...	112—117
Dec. 10	4	4	Do. 4 p.c. New Deb. Red. ...	95—100
Mar. 10	7½	7½	Brit. Gas Light Ord.	127—132
Dec. 31	5½	5½	Do. 5½ p.c. 'B' Cum. Pref. ...	108—113
Dec. 10	4	4	Do. 4 p.c. Red. Deb.	92— 97
Feb. 11	10	10	Cambridge U. & T. Orig. 10 p.c. Cons. ...	190—200
"	5	5	Do. 5 p.c. Cons. 'C'	95—100
"	7	7	Do. 7 p.c. Cons. 'B.'	135—140
Apr. 14	4½	4½	Cape Town, Ltd., 4½ p.c. Cu. Ff. ...	16/6—18/6
Feb. 11	6½	6½	Cardiff Con. Ord.	119—124
Mar. 10	5	5	Cheltenham, 5 p.c. basic Cons. Ord. ...	100—105
Dec. 10	4	4	Do. 4 p.c. Perp. Deb.	93— 98
Feb. 11	5½	5½	Chester United Ord.	106—111
Oct. 29	—	7	Colombo Ltd., Ord.	30/ —35/
"	—	7	Do. 7 p.c. Pref.	22/6—24/6
Mar. 31	5	5	Colonial Gas Assn. Ltd. Ord.	16/ —18/ xd
"	—	8	Do. 8 p.c. Pref....	23 6—25/6
Jan. 28	5	5	Commercial Ord.	87— 92
Dec 10	3	3	Do. 3 p.c. Deb. Perp.	72— 77
Feb. 11	5	5	Do. 5 p.c. Irred. Deb.... ...	107—112
"	6	6	Croydon sliding scale	118—123
"	5	5	Do. max. div.	101—106
"	4	4	Do. 4 p.c. Irred. Pref.	93— 98
Dec. 31	4	4	Do. 4 p.c. Perp. Deb.... ...	95—100
"	5	5	Do. 5 p.c. Perp. Deb.... ...	117—122
Feb. 11	8	8½	Derby Cons. Ord.	133—138
Dec. 10	4	4	Do. 4 p.c. Red. Deb.	93— 98
Feb. 11	5	5	East Hull Ord.	92— 97
"	5	5	East Surrey 'B,' 5 p.c	98—103
"	6	6	Do. 6 p.c. Cum. Pref.... ...	117—122
Dec. 31	5	5	Do. 5 p.c. Irred. Deb.	118—123
Feb. 26	6½	6½	East Wight Cons. Ord.	108—113
Mar. 10	5	5	Eastbourne 'A'	97—102
"	3½	3½	Do. 'B'	94— 99
Nov. 12	5	5	Gas Consolidation Ord. 'A'	21/ —23/
"	5	5	Do. Ord. 'B'	21/ —23/
"	4	4	Do. 4 p.c. Red. Cum. Pref.	17/6—19/6
Feb. 11	5	5	Gas Light & Coke Ord.	22/9—23/9
"	3½	3½	Do. 3½ p.c. max.	77— 82
"	4	4	Do. 4 p.c. Con. Pref.	97—102
Dec. 31	3½	3½	Do. 3½ p.c. Red. Pref.... ...	95—100
Nov. 26	3	3	Do. 3 p.c. Con. Deb.	84— 89
"	5	5	Do. 5 p.c. Deb.	102—107
"	4½	4½	Do. 4½ p.c. Red. Deb.	102—107
Mar. 10	3½	3½	Do. 3½ p.c. Red. Deb.... ...	93— 98
"	5	5	Gloucester Cons. Ord.	94— 99
Feb. 11	4	2	Great Yarmouth (8½ p.c. max)	13 — 14
Feb. 25	7½	7½	Guildford Cons. Ord.	132—137
"	5	5	Hampton C't, 5 p.c. Cons. Ord.	95—100
"	5	5	Hartlepool G. & W. 5 p.c. Ord.	92— 97
Oct. 1	—	6	Hastings & St. L. (5 p.c. Std.)	98—103
"	—	5	Do. (3½ p.c. Std.)	82— 87
June 18	7½	6	Holyhead & N. Wales Ord.	20/—22/6
Mar. 10	5	5	Hornsey 3½ p.c. Std.	89— 94
"	6 7/10	6 7/10	Do. 5 p.c. Std	110—115
May 14	8½	6	Imperial Continental Cap.	122—127
Jan. 28	3½	3½	Do. 3½ p.c. Red. Deb....	95—100
Mar. 31	7½	7½	Lea Bridge Co., Cons. Ord....	132—137
Feb. 11	5½	5½	Liverpool 5 p.c. Ord.	119—124
Mar. 10	7½	7½	Luton Cons. Ord. 'A'	148—153
"	6½	6½	Do. Ord. 'B'	115—120

When last ex-Dividend.	Dividends Interest.% Last Yr.	Pref. Yr.	NAME.	Quotations April 29
Jan. 14	7	7	Malta & Med'n., 7 p.c. 1st Pref.	100—110
	7½	7½	Do. 7½ p.c. 2nd. Pref....	105—115
Feb. 25	5 5/8	5 5/8	M.S. Utility 'A' Cons.	100—105
"	3 3/8	3 3/8	Do. 'B' Cons.	68— 73
"	5	5	Do. 'C' Cons.	102—107
	4	4	Do. 4 p.c. Cons. Pref.	96—101
Oct. 29	4	4	Montevideo, Ltd. Ord.	118—123
Feb. 11	5½	5½	Newcastle and Gateshead Ord.	24/9—25/9
Dec. 31	3½	3½	Do. 3½ p.c. Perp. Deb.	93—, 98
Mar. 10	7	7	Newport (Mon.) Cons.	93— 98
Dec. 10	5	5	Do. 5 p.c. Perp. Deb....	112—117
Mar. 31	6½	6½	North Middlesex 6 p.c.	122—127½
	5	5	Do. 5 p.c. Pref.	105—110
Feb. 11	5	5	Northampton Cons.	103—108
	9½	10	Oxford, Cons. Ord.	200—210
Dec. 10	5½	5½	Plymouth & Stone Ord.	108—113
	8½	8½	Do. Addl.	13½— 14½
	7½	7½	Do. New	12½— 13½
Mar. 10	5	5	Do. 5 p.c. Deb. Perp....	118—123
Feb. 11	7½	7½	Portsmouth & Gosport Cons.	145—150
	5	5	Do. 5 p.c. max.	100—105
	10	10	Preston 'A'	177—182
	7	7	Do. 'B'	125—130
June 24	46	2	Primitiva Holdings, Ltd. Ord.	12/ —14/-
Dec. 10	6	6	Do. 6½ p.c. Red. Cum. Pref.	100—105
Feb. 11	5	5	Reading, 5 p.c. max.	97—102
Dec. 10	—	4	Do. 3½ p.c. Red. (Non-Cum.) Pref....	94— 99
Feb. 11	—	—	Do. 4 p.c. Perp. Deb....	92— 97
	5	5	Romford, Ord.	110—115
Mar. 31	4	4	Do. 4 p.c. Debs. Red	95—100
Sept. 17	—	7½	Severn Val. Ltd. Ord.	22/6—23/6
Feb. 25	6½	6½	Do. 4½ p.c. Cum. Pref.	20 6—21/6
Dec. 31	4	4	Sheffield Cons..	142—147
Sept. 3	—	6	Do. 4 p.c. Red. Deb.	94— 99
Mar. 10	4½	4½	South East'n Gas Ltd. Ord.	22/ —23/
	4	4	Do. 4½ p.c. Red. Cum. Pref.	20/9—21/9
Feb. 11	5	5	Do. 4 p.c. Irred. Cum. Pref.	19/—20/-
	6	6	South Metropolitan Ord.	97½—100½
	4	4	Do. 6 p.c. Irred. Pref....	122 —127
Dec. 31	3	3	Do. 4 p.c. Irred. Pref.	96 — 99
Jan. 14	5	5	Do. 3 p.c. Perp. Deb.	82 — 87
Jan. 28	5	5	Do. 5 p.c. Red. Deb.	98 —103
	5	5	South Suburban Ord. 5 p.c.	112 —117
	4	4	Do. 5 p.c. Perp. Pref....	108 —113
	3½	3½	Do. 4 p.c. Perp. Pref....	94 — 99
	3½	3½	Do. 3½ p.c. Red. Pref....	90 — 95
Dec. 10	5	5	Do. 5 p.c. Perp. Deb....	118 —123
Apr. 28	5½	5½	South West. G. & W. Ltd. Ord	19/—21/- xd
Feb. 11	5	5	Southampton Ord.	101 —106
Jan. 28	6	6	Sunderland Ord.	113 —118
Feb. 11	4½	4½	Swansea Ord.	82 — 87
	5½	5½	Do. 5½ p.c. Red. Pref.	100 —105
Mar. 10	7	7	Swindon Cons. Ord.	114 —119
	5	5	Tottenham Ord.	115 —120
	5	5	Do. 5 p.c. Pref.	108 —113
	5½	5½	Do. 5½ p.c. Irred. Pref.	119 —124
	5½	5½	Do. 4 p.c. Perp. Deb....	95 —100
Dec. 10	4	4	Tunbridge Wells, 4 p.c. Sliding	123 —128
Oct. 1	—	7½	U. Kingdom Ltd. Ord.	23/ —24/
Nov. 12	—	7	Do. 4½ p.c. 1st Cum. Pref.	22/—23/
	4½	4½	Do. 4 p.c. 1st Red. Cum. Pref.... ...	19/ —20/
	4	4	Do. 4½ p.c. 2nd Non. Cum. Pf.... ...	19/3—20/3
Dec. 10	4½	4½	Do. 3½ p.c. Red. Deb....	93 — 98
Mar. 10	3½	3½	Uxbridge, &c., 5 p.c. Cap.	119 —124
Aug. 6	—	6½	Do. 5 p.c. Pref.	108 —113
	5	5	Do. 5 p.c. Perp. Deb.	117 —122
Nov. 26	5	5	Wandsworth Cons.	117 —122
Feb. 11	5	5	Do. 4 p.c. Pref....	97 —102
	4	4	Do. 5 p.c. Irred. Deb....	121 —126
Dec. 10	5	5	Do. 4 p.c. Irred. Deb....	95 —100
	4	4	Watford & St. Albans Ord.	116 —121
Jan. 28	5	5	Do. 5 p.c. Pref.	105 —110
	5	5	Do. 5½ p.c. Pref.	120 —125
	5½	5½	Weymouth Ord. (5 p.c. Basic)	92 — 97
Feb. 11	5	5	Woking District "A" Ord....	182 —192
	10½	11	Do. "B" Ord....	128 —133
	7.35	7·7	Wolverhampton Cons. Ord.	119 —124
Feb. 11	7½	8	York Cons. Ord.	97 —102
Mar. 31	5	5		

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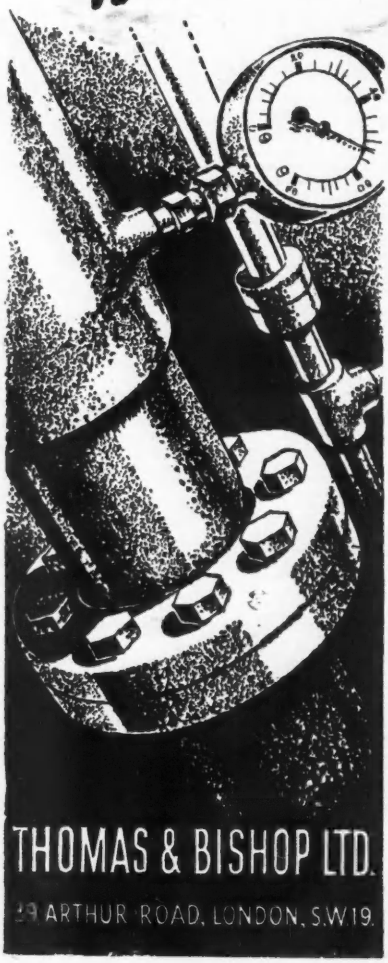

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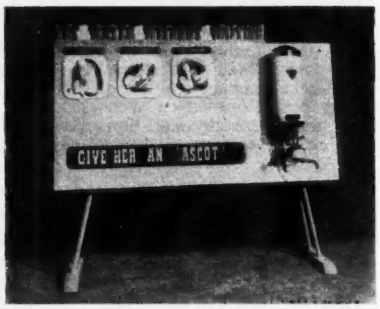
The Rotary Hoe

passes, to a depth controllable in ½ in. stages down to 8 in. By regulating the speed of the rotor in relation to that of the driving wheels, the correct texture, fine or coarse as required, is easily obtained. Being designed for hard duty in the agricultural field, the rotary hoe is well adapted to handle this task without mechanical failure. At one of London's large gas undertakings, where this machine has proved its worth by giving over two years' reliable service, it has been found that the rotary hoe will carry out, in four hours, work which formerly occupied four days of manual labour using shovels. It is only necessary to make three or four runs over a bed of 100 cubic yards of oxide to reduce it to the required consistency, and simultaneously aerate it to the full depth.

Ingenuity on Parade

The Tottenham Gas Company is to be congratulated on the really beautiful displays designed and produced on its own premises out of scrap material. The photograph shows a typical example of a double sided window display of which a considerable number have been made to support the



Company's new hot water campaign. At the rear of the display another Ascot gas water heater is shown with suitable copy material and the construction cleverly utilizes scrap blackout plywood, blast protection panels, as well as broom sticks for support.

GAS UNDERTAKINGS' RESULTS

Radcliffe, Farnworth, and District Gas Company.—There was a revenue account profit for 1947 of £44,923 and a surplus on the year's trading of £5,815. Gas sales increased by 3.17% to a new record of 3,745,115 therms, which is 87% above the 1939 level. Ordinary dividend has been maintained at 5%. Presiding at the recent annual meeting Colonel W. M. Carr said that the Company could have reduced the price of gas by a halfpenny per therm from April 1, but the Minister of Fuel and Power had made an Order preventing any price reduction—not, in his opinion, a very good foreboding for the future of the gas industry under nationalization. The provision of a cheaper and better service to the consumer had always been their primary consideration, but there were indications that political considerations would take precedence over economic considerations following nationalization. He hoped the industry would not become the Cinderella of what Mr. Shinwell had called the "trilogy"—coal, gas, and electricity, because he believed it had the greatest part to play in the national economy.

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53, Norman Road, Greenwich, London, S.E.10. T/N Greenwich 2266–7.
Our COOKER LININGS, CROWN TRAYS and SPLASHBACKS have been well proved by the Gas Industry.

M. E. WILD & CO. LTD.
Mechanical Engineers, Argyle Street, Birmingham 7. T/N East 0472.
CAPSTANS. BY-PRODUCTS COKE OVEN MACHINERY. ELEVATORS. CONVEYORS. WAGON TIPPLERS.

E. E.
JEAVONS
& CO. LTD.
TIPTON

Contractors for
GAS DISTRIBUTION

'Phone :- TIPTON 2161 'Grams :- 'PIPELINES, TIPTON'

THOMAS BUGDEN & CO.
India-Rubber and Airproof Manufacturers and General Contractors.
LARGEST MANUFACTURERS OF GAS MAIN BAGS.
Telegrams—"AIRPROOF, BARB, LONDON." Telephone—6147 CLERKENWELL
Contractors to H.M. Government

Gas ... for Repairing Mains

PATENTEES OF THE
DENMAR BAG
Impervious to Main Liquor and Climatic Influences.

Round or Cylinder Shape.

Pull-through and Expanding MAIN STOPPERS.

All types of INDIA-RUBBER BOOTS.

DRAIN RODS AND WHALE-BONE BRUSHES.

HOSE AND TUBING FOR ALL PURPOSES.

Contractors' & Miners' Woollen Jackets, Trousers, Hats, &c.

Stokers' Mitts and Gloves of every description.

244, Goswell Road, LONDON, E.C.1

BIF (Castle Bromwich) Stand No. D714

The perfect drawing board

The MAVITTA Drafting Machine stamps your drawing office as EFFICIENT. Made of steel tube with adjustable ball-bearings. The main angles are located automatically, intermediate angles by lock.

THE MAVITTA DRAFTING MACHINES LTD.
Highlands Road, Shirley, near Birmingham, England.
Telephone: Solihull 2231/2.
Telegrams: MAVITTA, Birmingham.

MAVITTA DRAFTING MACHINES

RETORTS MADE GAS TIGHT
when patched with—

ONX SUPER 83 BRAND FIRE CEMENT

A recent Testimonial from Gas Dept.
"We are pleased with results obtained after using ONX Super '83' Brand. "Our settings were very bad, with large cracks in retorts, and portions of wall actually collapsed. "Now, six months after repairing 28 retorts they appear as sound as ever; we anticipate the life of the settings will be prolonged."

A.L.CURTIS *Westmoor Works* CHATTERIS · Cambs · Eng.

Plant for
Movement of Material
in BULK
Designed, Constructed and set to work in any part of the world

STEELHOIST

STRACHAN & HENSHAW LTD.
STEELHOIST WORKS, BRISTOL 2. *Phone 77664*

8470Q

INDUSTRIAL WIRE BROOM HEADS

These Wire Broom Heads are Hand Made and are especially manufactured for use where a Heavy Duty wire broom head is required. The Leading Gas Companies, Road Making Contractors, Colliery Undertakings, Iron and Steel Manufacturers and Engineering Works are finding these Wire Broom Heads give very satisfactory service. Delivery is Ex-Stock and immediate attention is given to orders.

10/6 EACH
Carriage paid on 3 or more.
Type A (Pliable).
Type B (Stiff).

Foundry Brushes also available, prices on application.

NORTHERN PUMP & EQUIPMENT CO., LTD.
35, HAMPSTEAD HIGH STREET, LONDON, N.W.3
Telephone: HAMpstead 8081 (10 lines).

HAND WINCHES
FOR ALL PURPOSES

20 SIZES
30 lbs. to 40 cwt.

LONDON ELECTRIC FIRM LTD.
SOUTH CROYDON. SURREY.
'Phone: UPLANDS 4871 Telegrams: ELECTRIC, PHONE, CROYDON

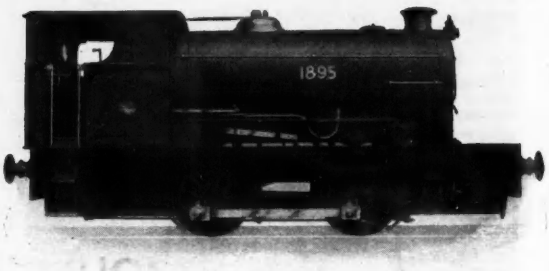
LOCOMOTIVES

LOCOMOTIVES of all Sizes and Gauges specially constructed for Main and Branch Lines, Contractors, Docks, Gas-Works, Collieries, Iron-Works, Brick and Cement Works, &c. Locomotives of various sizes always in progress for early delivery.

Photographs, Specifications, and prices on Application

PECKETT & SONS, LTD., Atlas Locomotive Works, **BRISTOL.**

Telegraphic Address: "PECKETT BRISTOL."
London Representatives: **FERGUSON & PALMER, 9, Victoria St., Westminster. S.W**



CONVEYORS, ELEVATORS, BUNKERS, ROOFS, HOISTS, Etc.

GOODALL, CLAYTON & CO. LTD.
LEEDS.

COAL AND COKE SCREENING & SIZING PLANTS.

RETORT SETTINGS PRODUCERS, FURNACES REPAIRS.

GAS RETORTS
HARRIS & PEARSON LTD
STOURBRIDGE. ENGLAND.

INSULATING BRICKS, RECUPERATOR TUBES, SPECIAL SEMI-SILICA QUALITY FOR SEGMENTAL RETORTS WITH NO EXPANSION OR CONTRACTION AT 1400° C

Manufacturers of
Fire Bricks, Lumps & Tiles
OF EVERY DESCRIPTION

TO ENSURE PRESSURE-TIGHT JOINTS

SPECIFY

TAPER WASK THREAD

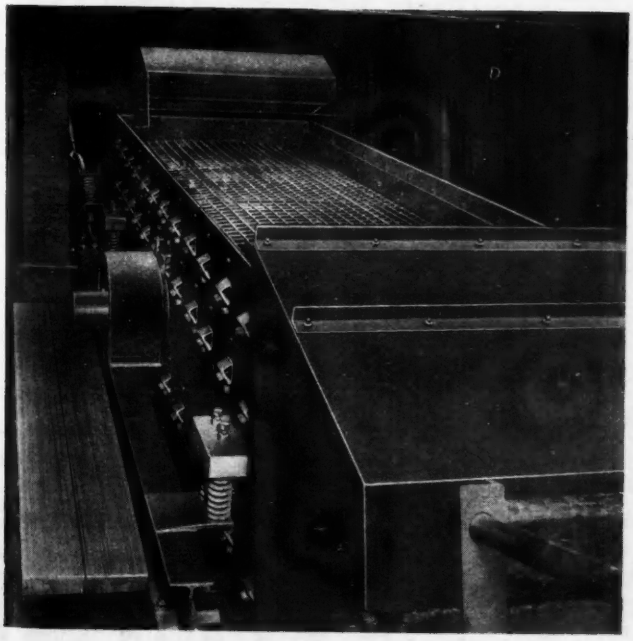
MALLEABLE IRON PIPE FITTINGS & UNIONS

Made by

WALTER SLINGSBY & CO., LTD.,

WOODHOUSE WORKS, KEIGHLEY

Grams: "Malleable" Keighley. Phone: Keighley 3749 (2 lines)

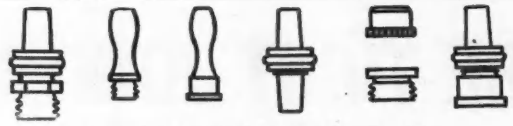


NIAGARA

If you wish to grade more in less time and do that grading decidedly better, you should consult Niagara upon the modernization of your plant. Constructive proposals will be backed by practical figures.

NIAGARA SCREENS (Gt. Britain) Ltd.

Straysfield Road, Clay Hill, Enfield, Middlesex



BRASSWORK
OF BEST QUALITY AT REASONABLE PRICES
OUR RANGE OF FITTINGS IS NOT COMPLETE BUT IT IS BEING EXTENDED THOSE INCLUDED ARE AVAILABLE FOR
EARLY DELIVERY,
USUALLY FROM STOCK
SEND FOR LEAFLET TO :
LOMAX & SMITH, LTD.
EAST KINGSWAY WORKS,
DUNDEE
TEL : DUNDEE 81123

PHONE : COLINTON 8772
GAS FOR SYKES SERVICE **WORKS**
TOOLS, BRASSWORK, COKE FORKS,
COKE BARROWS, ETC.
EQUIPMENT
SYKES & Co FERNIELAW AVE., COLINTON, EDINBURGH, 13

UNDERPRESSURE ENGINEERING CO., LTD.
UNDERPRESSURE CONNECTIONS
SPLIT COLLARS
SOCKET CLIPS
UNION FOUNDRY, MANSFIELD, NOTTS.
NORFOLK HOUSE, NORFOLK STREET, STRAND, W.C.2
Service Enquiries : TEMPLE BAR 2943. *London Storehouse :*
VALE ROYAL, KING'S CROSS, N.7.
Everything for Gas and Waterworks Maintenance
CENTRAL ACTION DRILL STANDS
SERVICE CLEANSERS
TOOLS, ETC.

PUBLISHERS' NOTICE.

GAS JOURNAL. (Weekly.)

Subscription Rates : Home and Empire :- **45/-** per annum ; Foreign :- **52/-** per annum. (Both payable in advance.) A copy of the "Gas Journal" Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements : All small classified advertisements are charged at **1/-** per line (approx. 8 words) – minimum charge **5/-**. A Box Number address occupies 2 lines, and a further **6d.** is charged towards cost of postage on replies.

GAS SERVICE. (Monthly.)

Annual subscription Rate :- **6/-** (payable in advance). Classified Advertisement charges as for "Gas Journal."

GAS.

The Record of the British Junior Gas Associations. (Monthly.)

Annual Subscription :- **12/-** (payable in advance). Classified Advertisements not accepted.

WALTER KING, LTD., 11, BOLT COURT, FLEET STREET, LONDON, E.C.4.
Telephone : CENtral 2236-7. **Telegrams : Gasking, Fleet, London.**

BROADBENT'S SLAG WOOL
THE WORLD'S FINEST
FIRE-PROOF NON-CONDUCTING
material for
GAS PLANT
of every description
J.C.BROADBENT & Co., LTD.
SLAG WOOL WORKS, REDCAR, YORKS, T.N. Redcar 16
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HARRISONS (LONDON) LTD.
66, MARK LANE, LONDON, E.C.3
Telegrams : "BIRCHROCK, LONDON." Telephone ROYal 3120.

PLANT, &c.
ROBERT DEMPSTER & SONS, LTD., ELLAND, Builders of CARBONIZING PLANTS, both Horizontal and Vertical. Manufacturers of CONDENSERS, PURIFIERS GASHOLDERS, &c., also every description of COAL and COKE HANDLING PLANT. *Telegrams :* "Dempster, Elland." *Telephone :* Elland 2241, 2242 and 2243.

PATENTS
MEWBURN, ELLIS & CO.,
CHARTERED PATENT AGENTS
AND TRADE MARK AGENTS
70 & 72, Chancery Lane, London, W.C.2.
Telegrams : "Patent, London." Phone : Holborn 0437
And 3, St. Nicholas Buildings, Newcastle-on-Tyne.

"KLEENOFF"
THE COOKER CLEANER
Tins for Sale to Consumers. In Bulk for Works Use.

OXIDE OF IRON.

BALE & CHURCH, LTD.
33, ST. MARY AT HILL, LONDON, E.C.3.
Telephone : Mansion House 1156. Telegrams : "Balefire, London."

(*Classified advertisements continued on Supplement 5*)

OXIDE

BEST QUALITY DUTCH BOG ORE
SPECIALLY ACTIVATED OXIDE OF IRON

which has stood the test of 70 years and rapidly absorbs 60% Sulphur (wet basis).

Send your enquiries to

GAS PURIFICATION & CHEMICAL COMPANY LIMITED

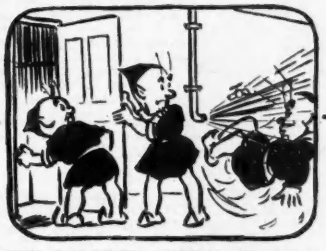
ESTABLISHED 1873

PALMERSTON HOUSE, 34, OLD BROAD STREET, LONDON, E.C. 2.

Telegrams: "Purification, Stock, London." Telephone: London Wall 5077

MAINLAYING

E. E. JEAVONS & CO., LTD.,
Gas Engineers and Mainlayers,
TIPTON, STAFFS



THE "FLUXITE QUINS" AT WORK

"I've fixed all the joints good and tight
Thanks to solder and good old FLUXITE
When I turn the mains tap
You might yell out, old chap
If the water comes through there all right."

For all SOLDERING work—you need FLUXITE—the paste flux—with which even dirty metals are soldered and "tinned." It does not "poison" the solder nor corrode the metal—and can be used with safety even on sensitive apparatus.

With Fluxite, joints can be "wiped" successfully that are *Impossible by any other method.*

FLUXITE has been used for over 40 years in Government Works and by the leading Engineers and Manufacturers. OF ALL IRONMONGERS—in tins—10d., 1s. 6d., and 3s. 0d.

The FLUXITE GUN puts FLUXITE where you want it by a simple pressure. Price 1s. 6d. or filled 2s. 6d.

ALL MECHANICS WILL HAVE

FLUXITE

IT SIMPLIFIES *ALL* SOLDERING

Write for Leaflets on CASE HARDENING STEEL and TEMPERING TOOLS with FLUXITE also on "WIPED JOINTS." Price 1d. each.

Fluxite Ltd. (Dept. G.J.), Bermondsey Street, S.E.1

REPAIRS

PAYNE & FLOOD, LTD., 182, Oldham Road, Manchester, 4, Phone Col. 1393, are in a position to undertake all types CARBONIZING PLANT REPAIRS, Retort House Reconstruction, Producer Relinings, Hot and Cold Patching, Structural Steelwork Erected and Dismantled. Expert advice available

MISCELLANEOUS

COMPANY with patents and designs for domestic gas appliances require further capital. Orders booked throughout the country. Jig and tooling and manufacturing organization complete. Capital required £2,500-£4,000. Active or non-active partner will be considered. Replies to No. 9727, "GAS JOURNAL," 11, Bolt Court, Fleet Street, London, E.C.4.

MONOMARK SERVICE. Permanent London address. Letters redirected immediately. Confidential. 5s. per annum. Royal patronage. Write MONOMARK, BCM/MONO5H, W.C.1.

SMALL single truckloads and larger quantities of good ROUGH BREEZE from any Gas-Works, large or small, in the United Kingdom required by merchants paying own Railway Tolls. Cash price and particulars to No. 9378, "GAS JOURNAL," 11, Bolt Court, Fleet Street, E.C.4.

PLANT FOR SALE & WANTED

FOR SALE. Considerable quantities of clean, new FIRE BRICKS. Delivery to any part of England. Enquiries invited. Apply A. KING & SONS, 110, Ber Street, Norwich.

FOR SALE. Two EXHAUSTER DRUMS, two-blade, each capable of passing 15,000 to 20,000 cu.ft. per hour. £60 each. ELY GAS COMPANY, Station Road, Ely, Cambs.

FOR SALE. CYLINDRICAL VERTICAL STEAM BOILER, in good condition, made by Messrs. Clayton, Sons & Company, Leeds (1925), complete with mountings, dimensions 9 ft. by 4 ft. 6 in., tested to 200 lb. per sq. in. Offers to be lodged with JOINT TOWN CLERKS, Burgh Chambers, Ardrossan, on or before May 10, 1948.

PHONE 98 STAINES.

AIR RECEIVER, 18 ft. 6 in. by 4 ft., 100 lb. Broom & Wade TWIN COMPRESSOR, Type D21.

Cylindrical ENCLOSED TANK, 30 ft. by 7 ft.

34 KW. STEAM GENERATING SET, 220 volts D.C.

Robey H.S. VERTICAL STEAM ENGINE, 9 in. by 7 in.

LANCASHIRE BOILER, 24 ft. by 8 ft., 120 lb.

Weir type VERTICAL FEED PUMP, 2,000 g.p.h.

HARRY H. GARDAM & CO., LTD., Staines.

JERSEY, CHANNEL ISLANDS

THE Jersey Gas Light Co., Ltd., invites offers for the purchase and removal within six months from date of purchase of the following:

Three Yorkshire type BOILERS, pressure 120 lb. per sq. in. Size 7 ft. 6 in. by 22 ft., evaporative capacity 400 gall. per hour (each boiler) using coke and breeze.

The above complete with superheaters and with existing fittings: Two steam turbines, fans and ducting. Insurance Test Certificates held.

The Company does not bind itself to accept the highest or any offer.

STUART PH. PEPIN,
Engineer and Manager.

97, Bath Street,
Jersey.
April 23, 1948.

CLEVEDON AND YATTON GAS COMPANY

SURPLUS PLANT FOR IMMEDIATE DISPOSAL.

GAS EXHAUSTER, by George Waller & Co. (20,000 cu.ft. per hour), direct coupled to steam engine and complete with 8 in. screw down valves, &c.

TOWER SCRUBBER (cylindrical) made of bolted cast iron sections with 8 in. inlet and outlet but no connections or valves. Capacity 250,000 cu.ft. per day.

GAS EXHAUSTER, in duplicate, by George Waller & Co. (each 10,000 cu.ft. per hour), direct coupled to steam engines, complete with all connections, by-pass, steam compensators, &c.

ROTARY WASHER SCRUBBER, by W. C. Holmes & Co., complete with 10 in. connections and three 10 in. valves but without attached steam engine. Capacity 250,000 cu.ft. per day.

GAS CONDENSER. Water cooled vertical cylindrical with ancillary water circulation, complete with 10 in. connection and three 10 in. valves. Capacity 250,000 cu.ft. per day.

VAPORISOR. Gas-heated petroleum vaporisor by W. Parkinson & Co., complete with 20 gall. tank, taps and regulating valve.

The above plant is in good condition and, with the exception of the first item, is in position as last used.

For further particulars or to view apply to the ENGINEER AND MANAGING DIRECTOR, 16, The Triangle Clevedon, Somerset.

BIRKENHEAD CORPORATION

SUPPLY OF STORES.

THE Corporation of Birkenhead are prepared to receive Tenders for the SUPPLY and DELIVERY of the following STORES AND MATERIALS, as required, at the Gas Department for the year commencing July 1, 1948:—

Form No.
1. WROUGHT IRON TUBES AND FITTINGS.
2. CAST IRON PIPES AND SPECIALS.
3. BRASSWORK GAS AND METER FITTINGS.
4. TOOLS BOLTS AND NUTS, IRON AND STEEL.
5. OILS, PAINTS, &c., BRUSHES, WASTE, HAMMER SHAFTS AND SUNDRIES.
7. GAS METERS.
8. TINWARE, &c.

Particulars, with conditions and form of tender, may be had, and samples inspected on application to the Gas Engineer, Gas Offices, Hind Street, Birkenhead.

Contractors are requested to read carefully the general conditions embodied in the form of tender.

Tenders must be received by me in a plain envelope, sealed, and not bearing any name or mark indicating the sender, and endorsed "Tender for Stores, &c., Gas Committee," not later than Thursday, May 27, 1948. Tenders not properly endorsed in accordance with instruction, will not be considered.

The Corporation do not bind themselves to accept the lowest or any tender, and reserve the right of accepting the whole or any portion of a tender.

E. W. TAME,
Town Clerk.

Town Hall,
Birkenhead.
April, 1948.

CONTRACTS OPEN

CITY OF HEREFORD

(GAS DEPARTMENT.)

STATIC OR LIVESEY WASHER.

TENDERS are invited for the supply of a secondhand STATIC WASHER or LIVESEY WASHER of 2 million cu.ft. per day capacity.

Tenders should state whether the price quoted is as standing at owner's works, or delivered to Hereford Gas-works, and should include full details of overall size, connections and valves.

Tenders should be forwarded to the Gas Engineer, Gas-works, Hereford, not later than Saturday, May 15, 1948.

T. B. FELTHAM,
Town Clerk.

Town Hall, Hereford.

LANCASTER/MORECAMBE JOINT GAS COMMITTEES

TO MAIN LAYING CONTRACTORS.

TENDERS are invited from Contractors with experience in gas main laying for EXCAVATING, LAYING, JOINTING, TESTING, FILLING IN, DISPOSAL OF SURPLUS AND TEMPORARY REINSTATEMENT WORK in connexion with the laying of approximately 2.9 miles of 18 in. bore Stanton-Wilson spun iron main to convey gas from a new gas-works site at White Lund to the Lancaster and Morecambe gasholders.

The 18 in. mains and specials will be supplied by the Joint Gas Committees.

Specification and tender forms can be obtained from the Joint Gas Engineers, Central Office, Gas-works, Lancaster.

R. M. MIDDLETON,
Town Hall.

Town Hall, Lancaster.
April 21, 1948.

CITY OF MANCHESTER

(GAS DEPARTMENT.)

THE Gas Committee invites tenders for the WORK AND MATERIALS required in the CLEANING AND PAINTING OF GASHOLDERS at Rochdale Road Gas-works.

Specification, general conditions and form of tender may be obtained on application to the Commercial Manager and Secretary, Gas Department, Town Hall, Manchester, 2.

Sealed tenders, in the envelope provided addressed to the Chairman of the Gas Committee and endorsed "Painting of Gasholders," must be delivered at the Gas Office, Town Hall, Manchester, 2, not later than 5 p.m., Friday May 14, 1948.

The Committee does not bind itself to accept the lowest or any tender.

PHILIP B. DINGLE,
Town Clerk.

Town Hall,
Manchester, 2.
April, 1948.

BOROUGH OF MANSFIELD

(GAS AND WATER DEPARTMENT.)

TENDERS are invited from Contractors for supplying and laying approximately 3,210 yards of 12 in. and 80 yards 9 in. bore spun cast iron GAS MAINS AND SPECIALS with mechanical joints. An alternative price is required for the same Main in steel with welded joints.

Specifications and tender forms can be obtained from the Gas and Water Engineer, Mr. F. C. Sylvester, M.Inst.Gas E., A.Inst.W.E., Lime Tree Place, Mansfield, where plans of the work may be seen by appointment.

Tenders, in envelopes sealed and endorsed "Tender for Gas Main and Main Laying" and bearing no name or mark to indicate the sender, must de delivered to the undersigned not later than June 1, 1948.

A. C. SHEPHERD,
Town Clerk.

Carr Bank, Mansfield.
April 23, 1948.

(*Classified advertisements continued on Supplement* 6.)

CONTRACTS OPEN (ctd.)

CITY OF MANCHESTER
(GAS DEPARTMENT.)

THE Gas Committee invites tenders for the work and materials required in the provision and construction of REINFORCED CONCRETE FOUNDATIONS FOR PURIFIER BOXES at Partington Gas-works.

Specification, general conditions and form of tender may be obtained on application to the Commercial Manager and Secretary, Gas Department, Town Hall, Manchester, 2.

Sealed tenders, in the envelope provided addressed to the Chairman of the Gas Committee and endorsed "Purifier Foundations," must be delivered at the Gas Office, Town Hall, Manchester, 2, not later than 5 p.m. on Friday, May 14, 1948.

The Committee does not bind itself to accept the lowest or any tender.

PHILIP B. DINGLE,
Town Clerk.

Town Hall,
Manchester, 2.
April, 1948.

APPOINTMENTS WANTED AND VACANT

None of the vacancies in these columns relates to a man between the ages of 18 and 50, inclusive, or a woman between the ages of 18 and 40, inclusive, unless he or she is excepted from the provisions of the Control of Engagement Order, 1947, or the vacancy is for employment excepted from the provisions of that Order.

YOUNG COKE WORKS MAINTENANCE ENGINEER, strict disciplinarian, excellent qualifications, requires a change. Must be a house available with employment. Please reply to No. 9728 "GAS JOURNAL," 11, Bolt Court, Fleet Street, London, E.C.4.

WANTED. Gentleman calling on Gas Companies to represent firm with specialities. On commission. Car essential. Every support. Apply to No. 9726, "GAS JOURNAL," 11, Bolt Court, Fleet Street, London, E.C.4.

EAST HULL GAS COMPANY

HOME SERVICE ADVISOR.

APPLICATIONS are invited for the position of HOME SERVICE ADVISOR at a commencing salary of £300 per annum.

Applicants should hold a recognized qualification in domestic science, be a good organizer, and be capable of demonstrating cookery, laundry and home service subjects.

The applicant appointed will be required to pass a medical examination before the appointment is confirmed and to contribute to the Company's staff pension fund.

Applications, with particulars of age, qualifications and experience, together with *copies* of recent Testimonials, should be forwarded to the undersigned, endorsed "Home Service Advisor," not later than May 12, 1948.

T. W. T. HAMMERTON,
Manager and Secretary.

St. Mark Street,
Hull.
May 20, 1948.

FIRST GARDEN CITY LIMITED, LETCHWORTH
(GAS DEPARTMENT.)

SALES AND SERVICE SUPERINTENDENT.

APPLICATIONS are invited for the above position. Duties applicable to the position call for practical knowledge and experience of gas fitting and maintenance work on all types of domestic and industrial appliances, and the ability to advise consumers, prepare estimates and supervise installation work.

Applicants should preferably possess the Ordinary Grade (Supply) Certificate of the Institution of Gas Engineers. Commencing salary £400 per annum.

Applications, giving details of age, training, and experience, together with the names of two persons for reference, to be received by the undersigned not later than May 31, 1948.

S. E. BALSOM,
Gas Engineer and Manager.

First Garden City, Ltd.,
Estate Office,
Letchworth.

APPLICATIONS are invited for the appointment of ENGINEERING SALES REPRESENTATIVE for South Wales and the West of England. Applicant with good practical knowledge of gas-works and chemical plant preferred. The appointment provides splendid opportunity for energetic man. Permanent appointment, generous superannuation scheme, car made available. Apply in writing, stating age, experience and salary required to the Personnel Officer, NEWTON CHAMBERS & CO., LTD., Thorncliffe, near Sheffield.

CITY OF LEEDS
(GAS DEPARTMENT.)

CHIEF DRAUGHTSMAN AND CLERK OF WORKS.

APPLICATIONS are invited for the above position from Corporate Members of the Institution of Gas Engineers.

The position is subject to the provisions of the Local Government Superannuation Act, 1937, and the successful applicant must pass a medical examination.

Commencing salary £635 per annum, and the maximum salary £710 per annum, subject to deductions for superannuation.

Applications, stating age, training, previous experience, present occupation, certificates held, addressed to the undersigned, must be delivered not later than June 1, 1948.

Canvassing in any form, either directly or indirectly, will be a disqualification.

C. S. SHAPLEY, M.I.Mech.E., M.Inst.Gas E.,
Engineer and General Manager.

Gas Offices,
Market Hall, Leeds, 2.
May, 1948.

CITY OF LEEDS
(GAS DEPARTMENT.)

CHIEF ASSISTANT DRAUGHTSMAN.

APPLICATIONS are invited for the above position. Applicants must be trained in the construction, design and erection of gas-works plant.

The position is subject to the provisions of the Local Government Superannuation Act, 1937, and the successful applicant must pass a medical examination.

Commencing salary £420 per annum, and the maximum salary £465 per annum, subject to deductions for superannuation.

Applications, stating age, training, previous experience, present occupation, certificates held, addressed to the undersigned, must be delivered not later than June 1, 1948.

Canvassing in any form, either directly or indirectly will be a disqualification.

C. S. SHAPLEY, M.I.Mech.E., M.Inst.Gas E.,
Engineer and General Manager.

Gas Offices,
Market Hall, Leeds, 2.
May, 1948.

BRITISH GAS LIGHT COMPANY LIMITED
NORWICH STATION

TECHNICAL ASSISTANT.

APPLICATIONS are invited for the position of TECHNICAL ASSISTANT, required primarily to assist in the supervision and control of a number of small undertakings with outputs from eight million to 250 million cu.ft. per year. Applicants should not be more than 35 years of age and have thorough practical experience in the operation and control of small works and the control of labour. Preference would be given to applicants holding the Institution of Gas Engineers Higher Grade Certificate in Gas Engineering (Manufacture), and the successful candidate would be required to pass a medical examination by the Company's Medical Officer.

The commencing salary would depend on qualifications and would be not less than £450 per annum. The candidate appointed would be required to reside in Norwich and a house would be available rent free, if required.

Applications, giving age and full details of education, training and positions held, together with *copies* of three recent Testimonials, should be received by the undersigned not later than May 31, 1948.

R. A. WESTON,
Engineer and Manager.

Gas-works,
Bishop Bridge,
Norwich, Norfolk.

LEAMINGTON PRIORS GAS COMPANY

TECHNICAL ASSISTANT.

APPLICATIONS are invited for the above position at an inclusive salary of £390 per annum.

Candidates should have practical and theoretical knowledge of gas-works routine, particularly operation of continuous vertical retort installations and should be competent draughtsmen.

No house is available at present but the appointed candidate would receive priority in the event of one of the Company's houses becoming vacant.

Applications, with *copies* of not more than three recent Testimonials, to be delivered by May 21, 1948, to :—

R. S. RAMSDEN,
Director, General Manager and Engineer.

Gas-works,
Leamington Spa.

COUNTY BOROUGH OF BLACKBURN

APPLICATIONS are invited for the post of SHIFT SUPERINTENDENT in the gas undertaking. Salary £450-£495 per annum (Grade III of the National Scales).

Candidates must have a thorough technical knowledge and practical experience of the operation of continuous vertical retort installations together with ancillary plant and be capable of taking control of the works processes. The works has a daily producing capacity of 7,000,000 cu.ft.

Applications, endorsed "Shift Superintendent," giving full details of experience, qualifications and present post, accompanied by *copies* of two recent Testimonials, to be delivered to the Engineer and Manager, Gas Department, Town Hall, Blackburn, by Monday, May 24, 1948.

CHAS. S. ROBINSON,
Town Clerk.

BOROUGH OF STOCKTON-ON-TEES
(GAS DEPARTMENT.)

WANTED. Two fully-experienced GAS MAIN AND SERVICE LAYERS. Union conditions. Rate per hour 2s. 6½d. Corporation houses will be made available at usual rentals, and subsistance allowance of 24s. 6d. per week will be paid until this accommodation is available. Apply immediately, giving full details, to ENGINEER AND GENERAL MANAGER, Corporation Gas-works, Thompson Street, Stockton-on-Tees.

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THE Colchester Gas Company require a CARBONIZING SUPERINTENDENT to take charge of continuous vertical retort house and C.W.G. plants. Salary £400 per annum. Applications, stating age, experience and present engagement, should be sent to the undersigned.

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MAURICE L. SMITH,
Engineer and Manager.

The Colchester Gas Company,
Gas-works,
Colchester, Essex.

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Applicants should have had a mechanical training, and be able to supervise the repairs and maintenance of all gas-works plant and machinery.

Applications, stating age, present position, training and experience, together with *copies* of two recent Testimonials should be forwarded to MANAGING DIRECTOR, Cross Street, Barnstaple.

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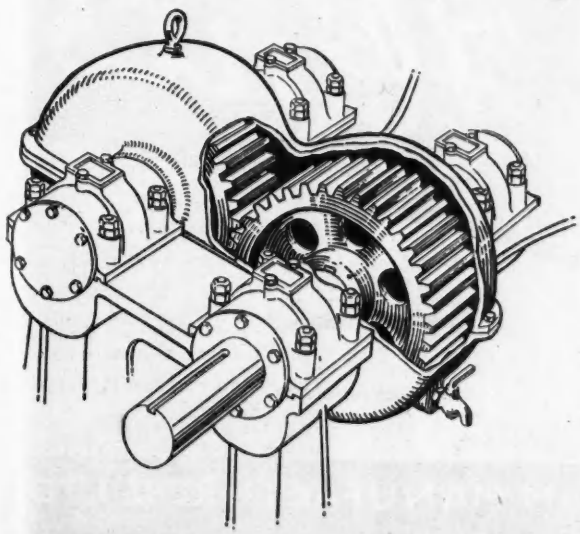

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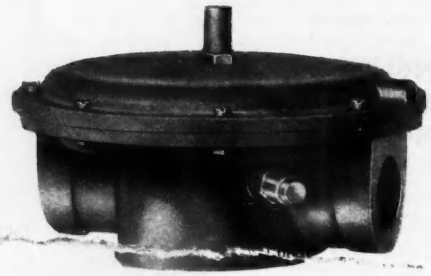

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